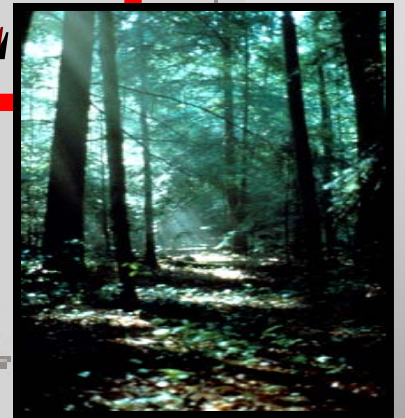


PUBLIC LANDS AND TRAILS IN A VERY FAST CHANGING SOCIAL LANDSCAPE



1 5 25 50 100 250 500 1000

Persons per square kilometer

www.srs.fs.fed.us/trends

CIESIN
Columbia University

OBJECTIVES

- **Acquaint you with some of the nationwide assessment work we do**
- **Review some of the more critical demand, supply and demographics information resulting from our work**
- **Make a few observations concerning social change, trails, public lands and outdoor recreation generally in the United States**

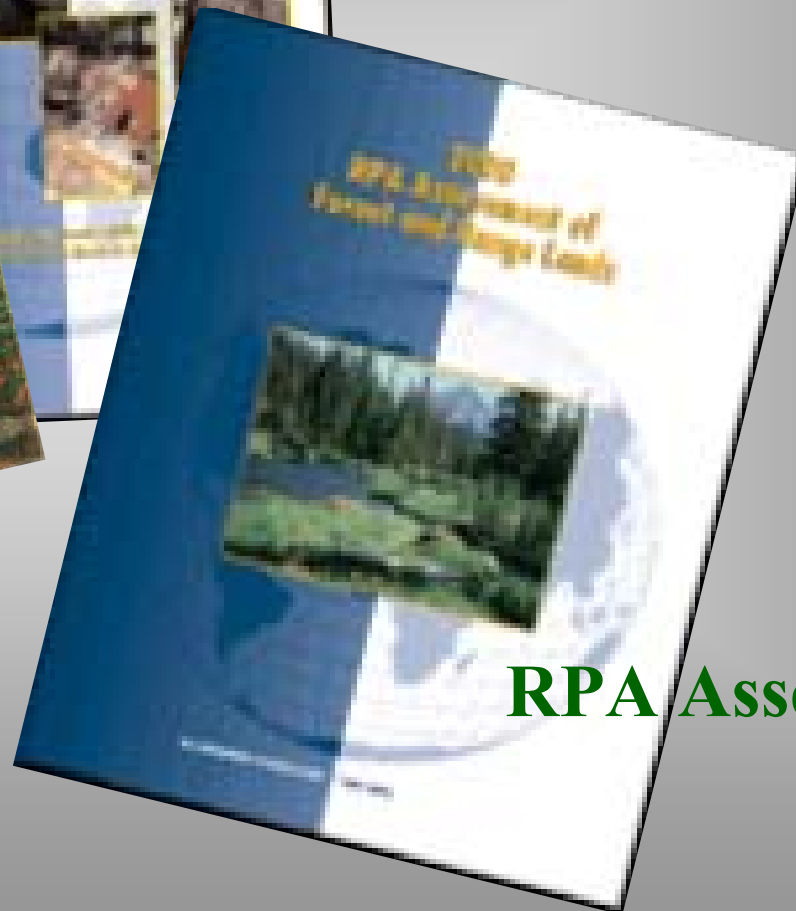
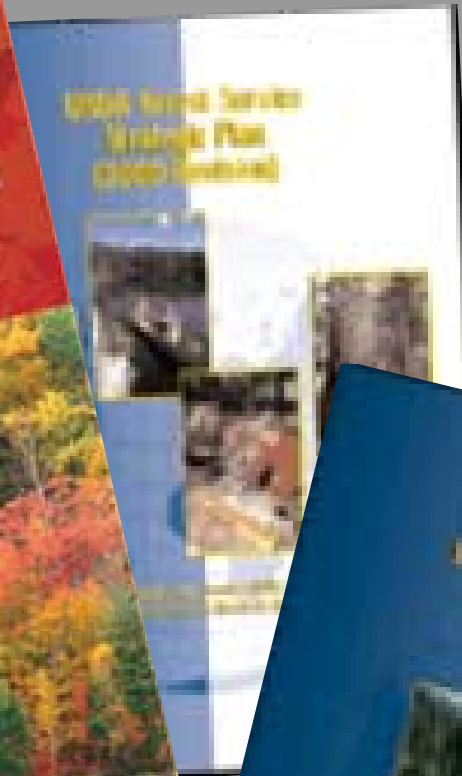
Outdoor Recreation, Wilderness and Demographics Research at Athens GA

- **A USDA Forest Service Research Unit since 1977**
- **Program of research includes surveying the public, estimating use of National Forests, nationally assessing trends and examining social differences**
- **Manage the interagency National Survey on Recreation and the Environment (NSRE)**
- **Conduct the national RPA and Montreal Process Assessments for OR and Social Values**

FS Strategic Plan

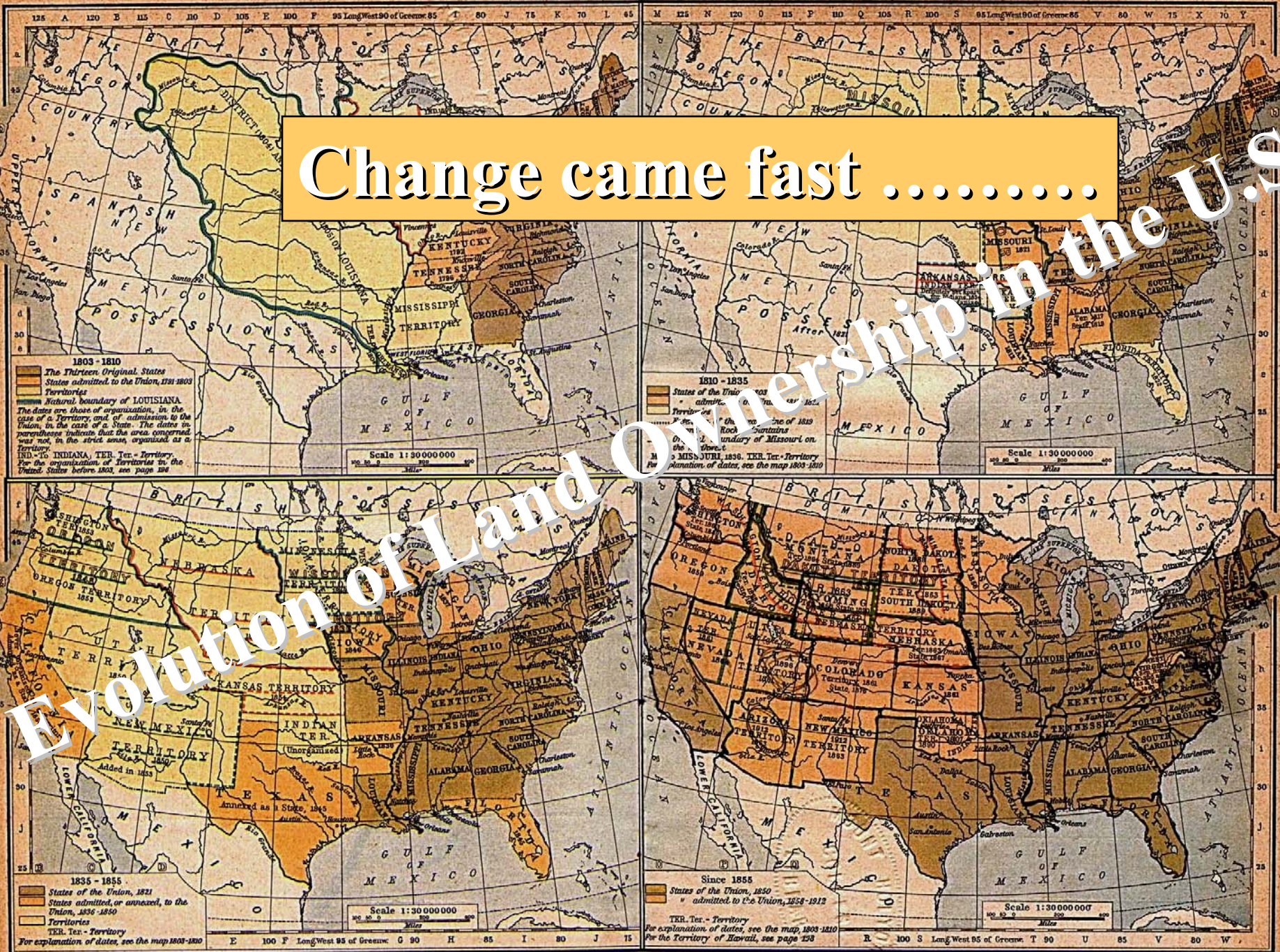


**Montreal
Process**



RPA Assessment

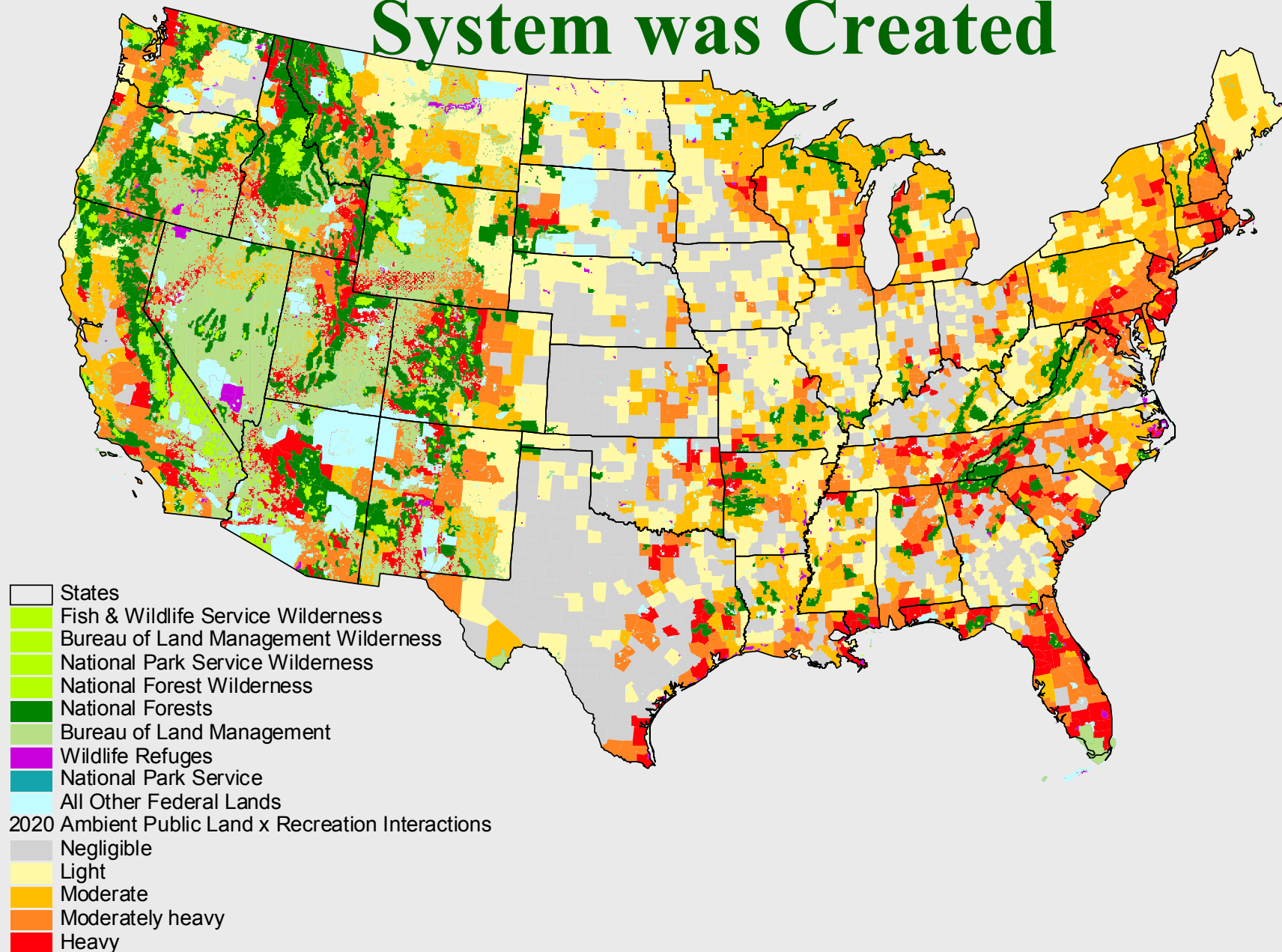
Change came fast



United States



A Rich Public Natural Land System was Created



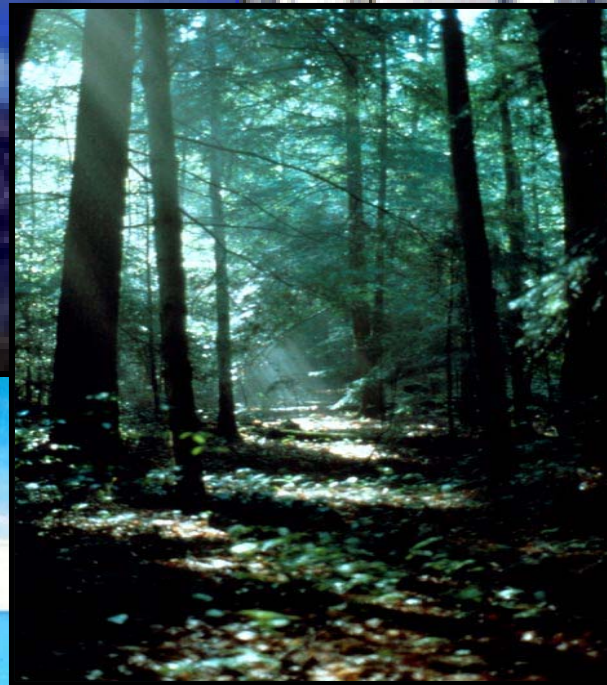


**Forests, Rivers and Minerals
for Raw Materials**

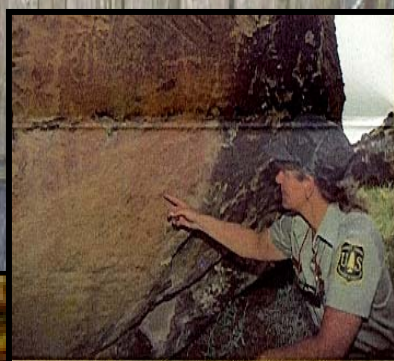
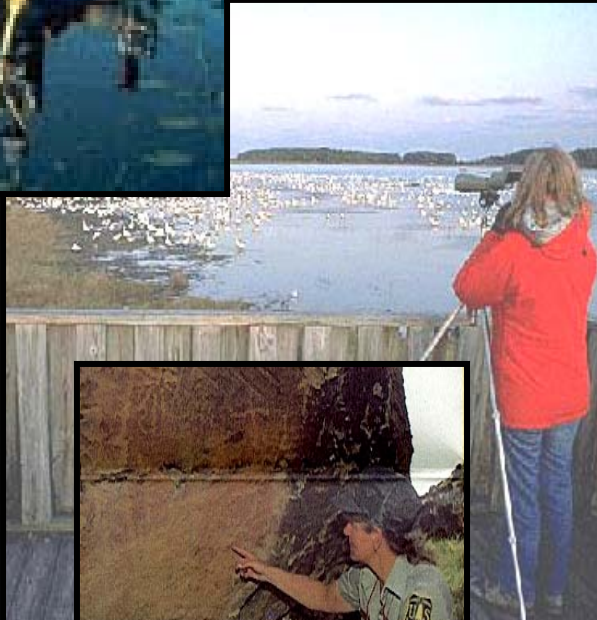
A Management Challenge for a Sustainable Future



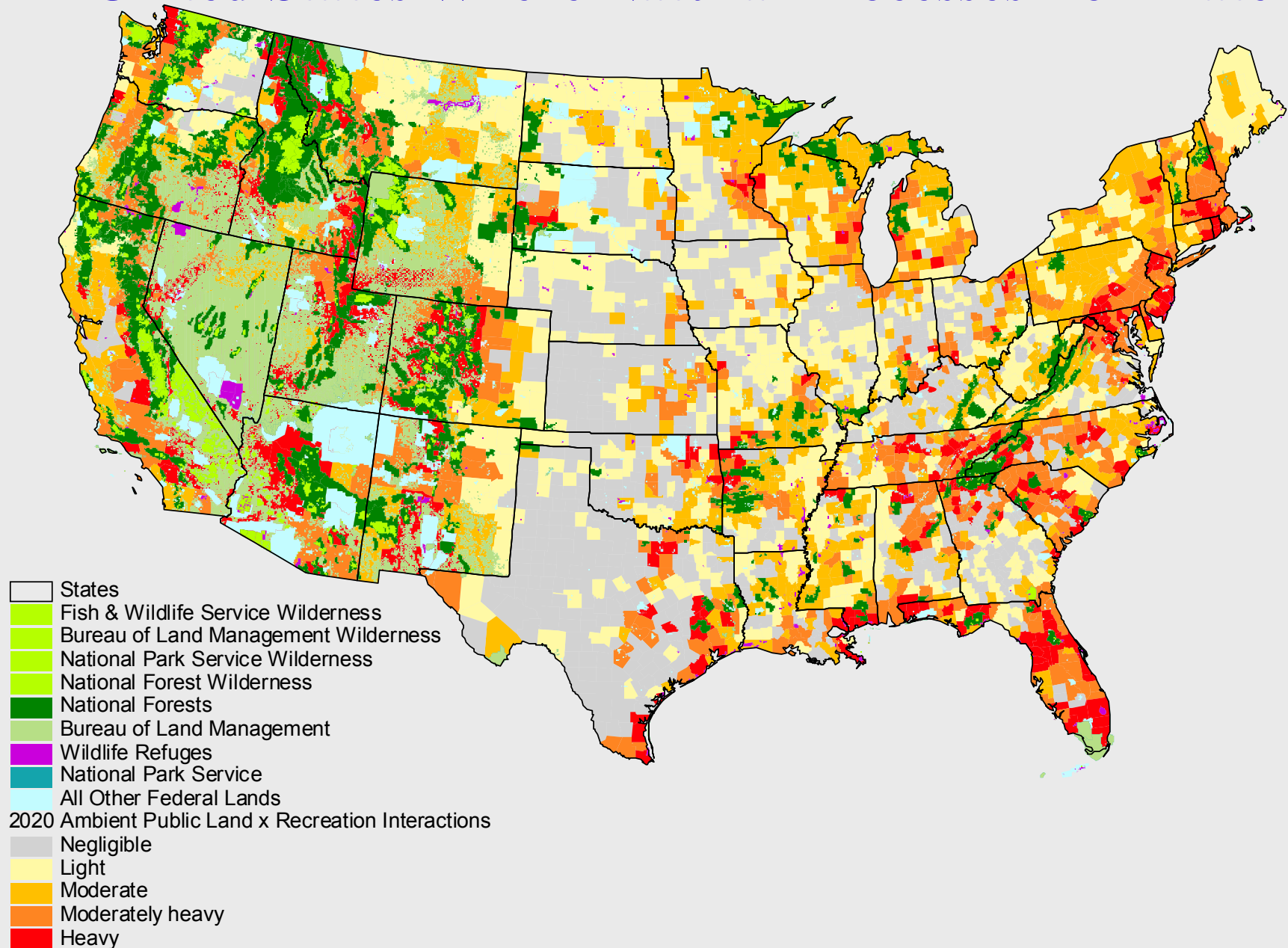
Irreplaceable Wild Lands Under Protection



Natural Settings for Fun

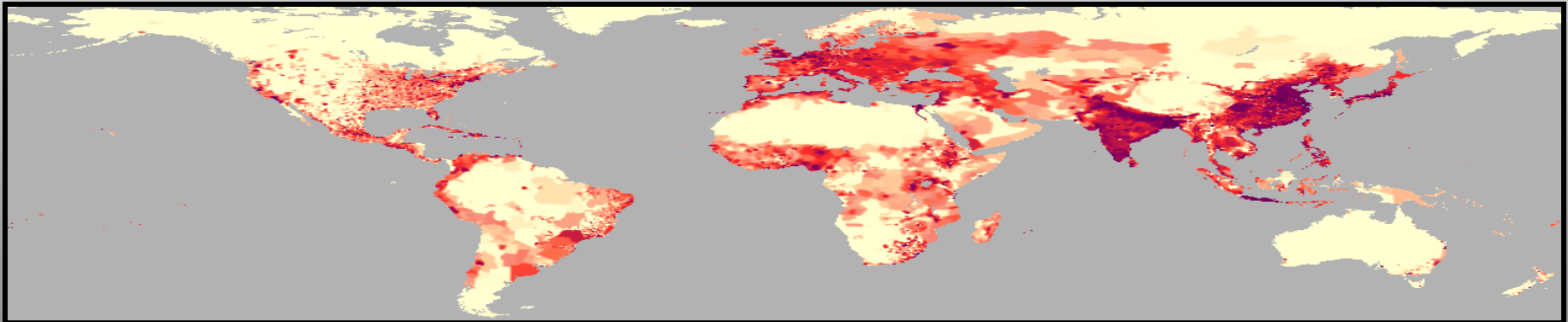


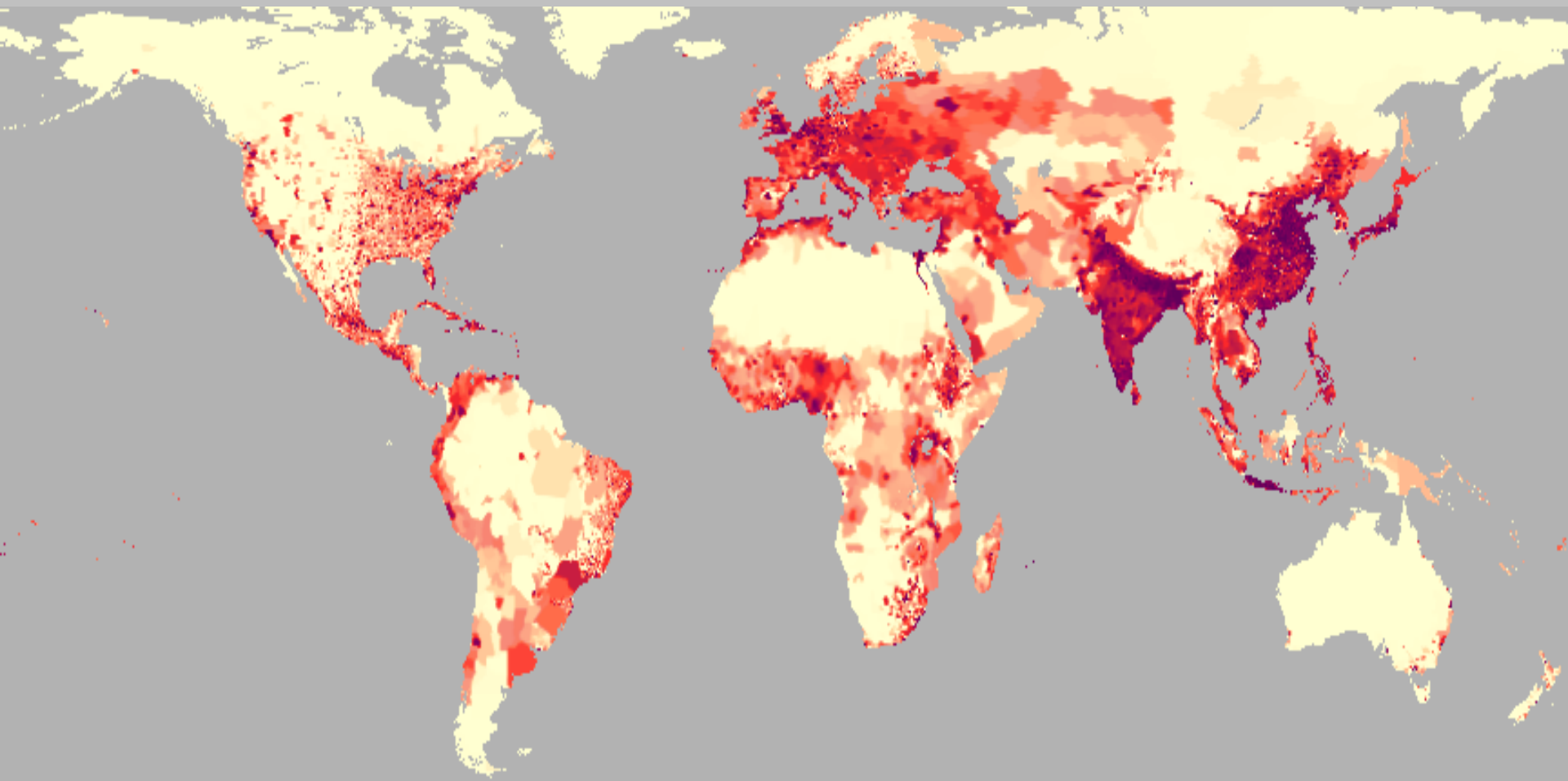
A System of Public Lands and Wilderness Across the United States Where Natural Processes Dominate



THE UNITED STATES IS A RAPIDLY CHANGING SOCIAL LANDSCAPE

**A Growing World Population on
the Move**



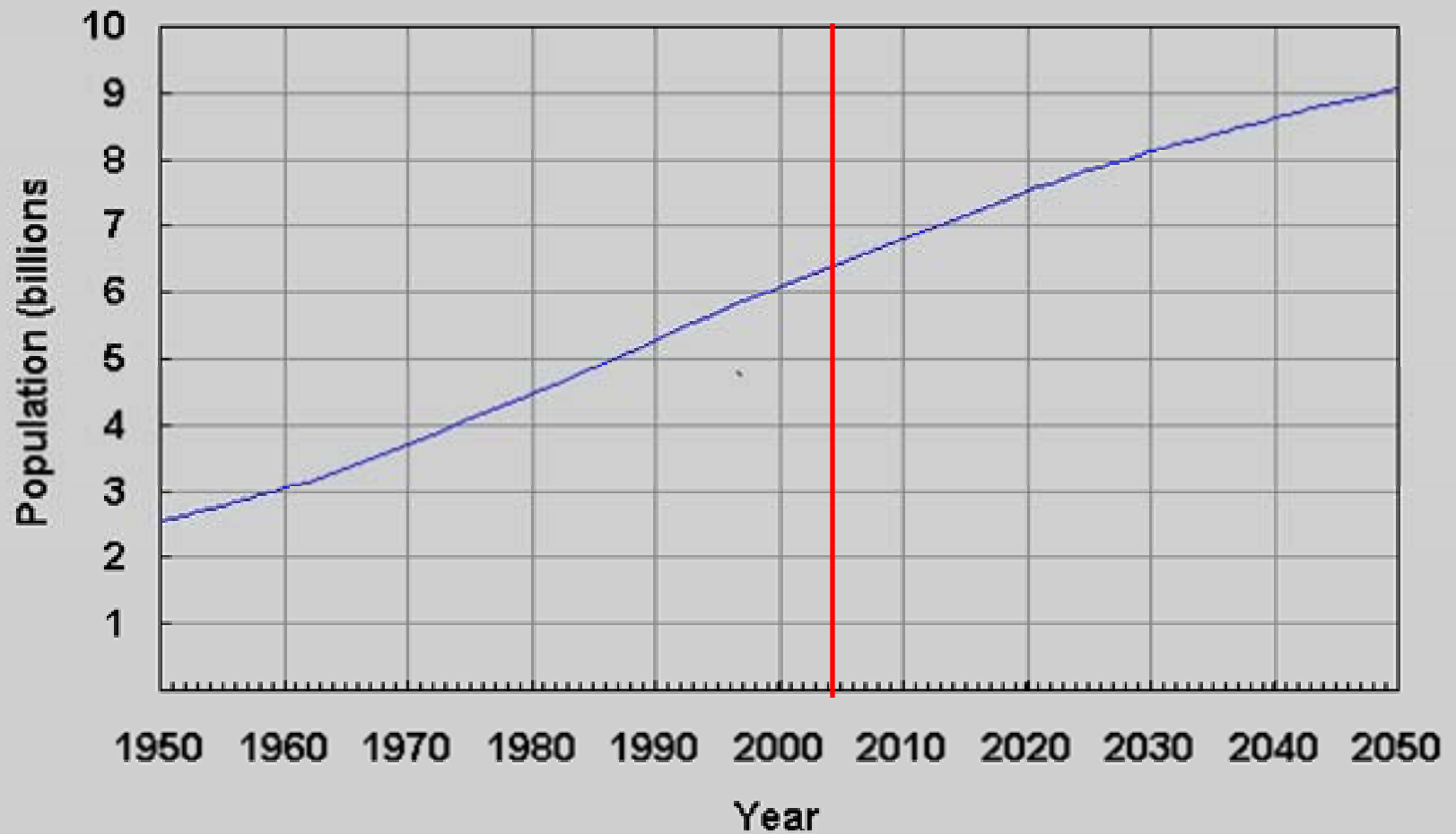


Population densities (per square km).



<http://sedac.ciesin.columbia.edu/gpw/>

World Population: 1950-2050



Source: U.S. Census Bureau, International Data Base, April 2004 version.

Monthly World population figures:

07/01/04 6,377,641,642

09/01/04 6,389,969,987

11/01/04 6,402,099,489

01/01/05 6,414,228,990

03/01/05 6,425,960,803

05/01/05 6,438,090,304

07/01/05 6,450,219,806

Growth approaching 100 million by this time next year

Book in 2001



DEMOGRAPHIC DATA
SOURCE

Footprints on the Land:

**An Assessment of
Demographic Trends
and the Future of
Natural Resources
in the United States**

**By
H. Ken Cordell
Christine Overdevest,
Principal Authors**



This published book examined the population, demographic, urban, rural, economic, leisure and recreation trends of the United States. An update is underway.

Socioeconomic Forces Shaping the Future of the United States: An Update of Footprints

By

H. Ken Cordell¹, John C. Bergstrom², Carter J. Betz¹, and Mary T. Green²

Introduction

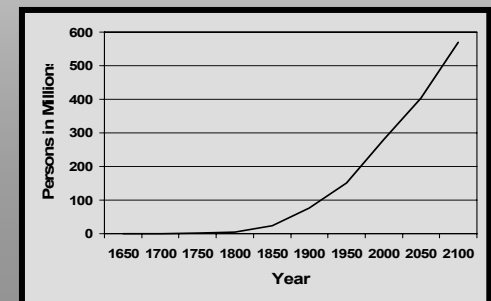
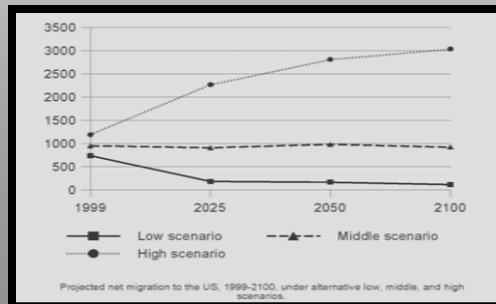
This chapter is devoted to providing up-to-date summaries of a number of highly important social and economic trends that will play a role in the future of the United States and its natural resources. The trends covered include population growth, changing composition of the population, urban growth and sprawl, transition of rural lands, economic growth, consumer spending, and recreation demands. This chapter is essentially an abbreviated update of the book *Footprints on the Land* (Cordell & Overdevest, 2001). It is undertaken

¹Project Leader and Outdoor Recreation Planner respectively, USDA Forest Service, Southern Research Station, Athens, GA.

²Respectively, Professor, Agriculture & Applied Economics, and Assistant Research Scientist, Warnell School of Forest Resources, University of Georgia, Athens, GA.

PUBLIC LANDS IN A RAPIDLY CHANGING SOCIAL LANDSCAPE

U. S. Population Growth: Immigration **plus** Natural Growth



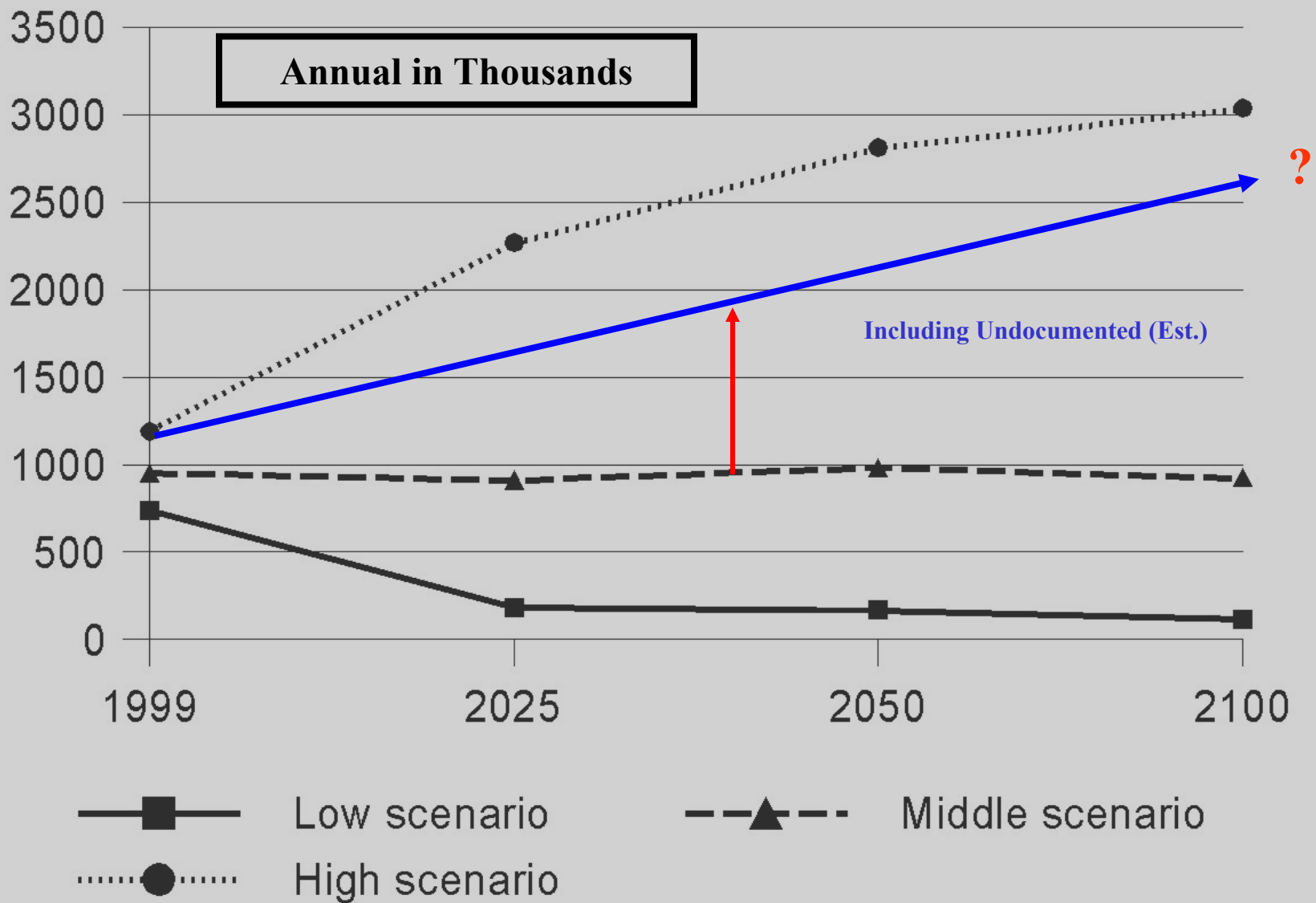
MILLIONS OF IMMIGRANTS LIVING **IN THE U.S. BY YEAR OF ENTRY**

1990 to 2000	1980-1989	1970-1979	Before 1970
---------------------	------------------	------------------	--------------------

(Millions)

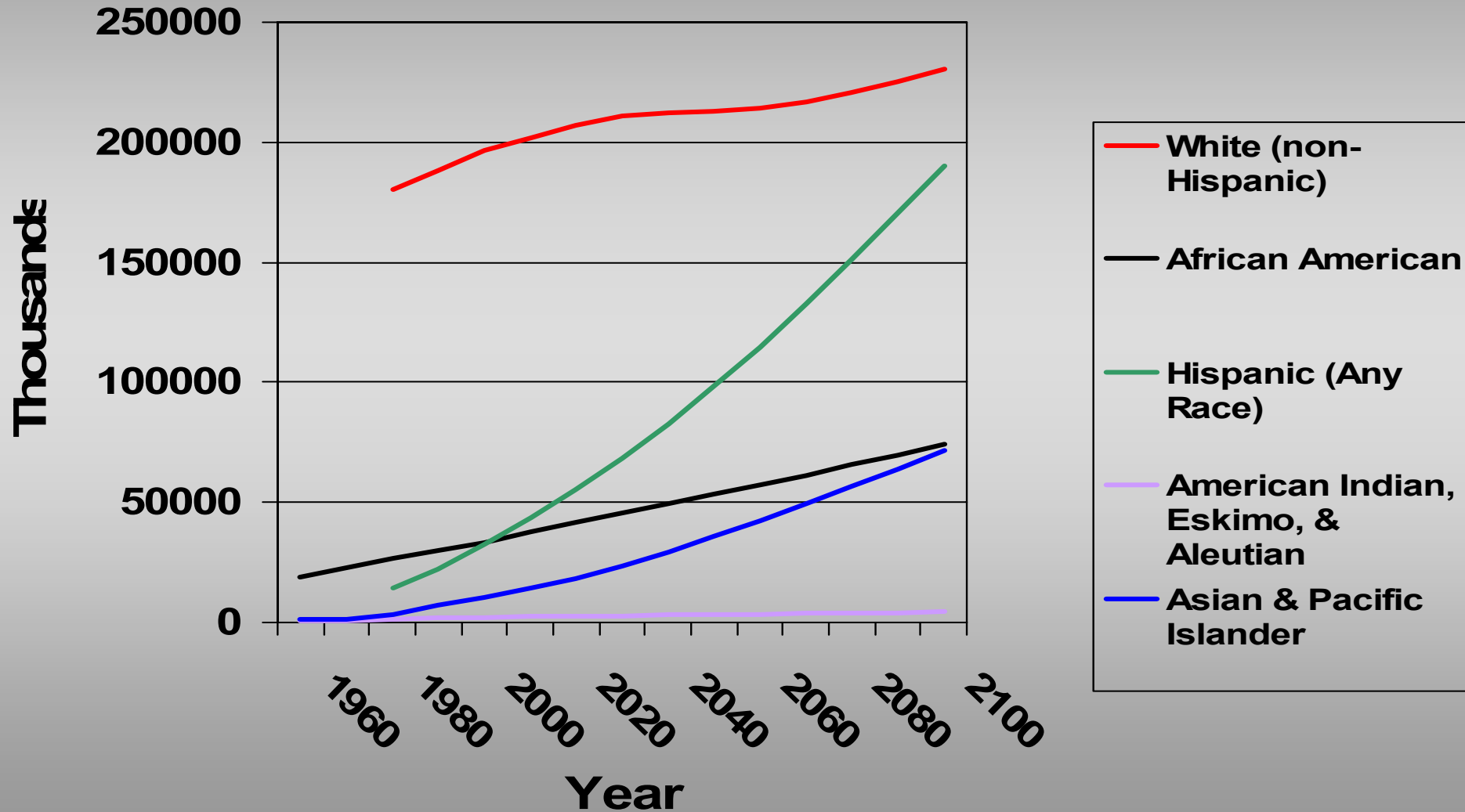
5.070	3.541	2.393	2.408
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Source: United States Bureau of Census

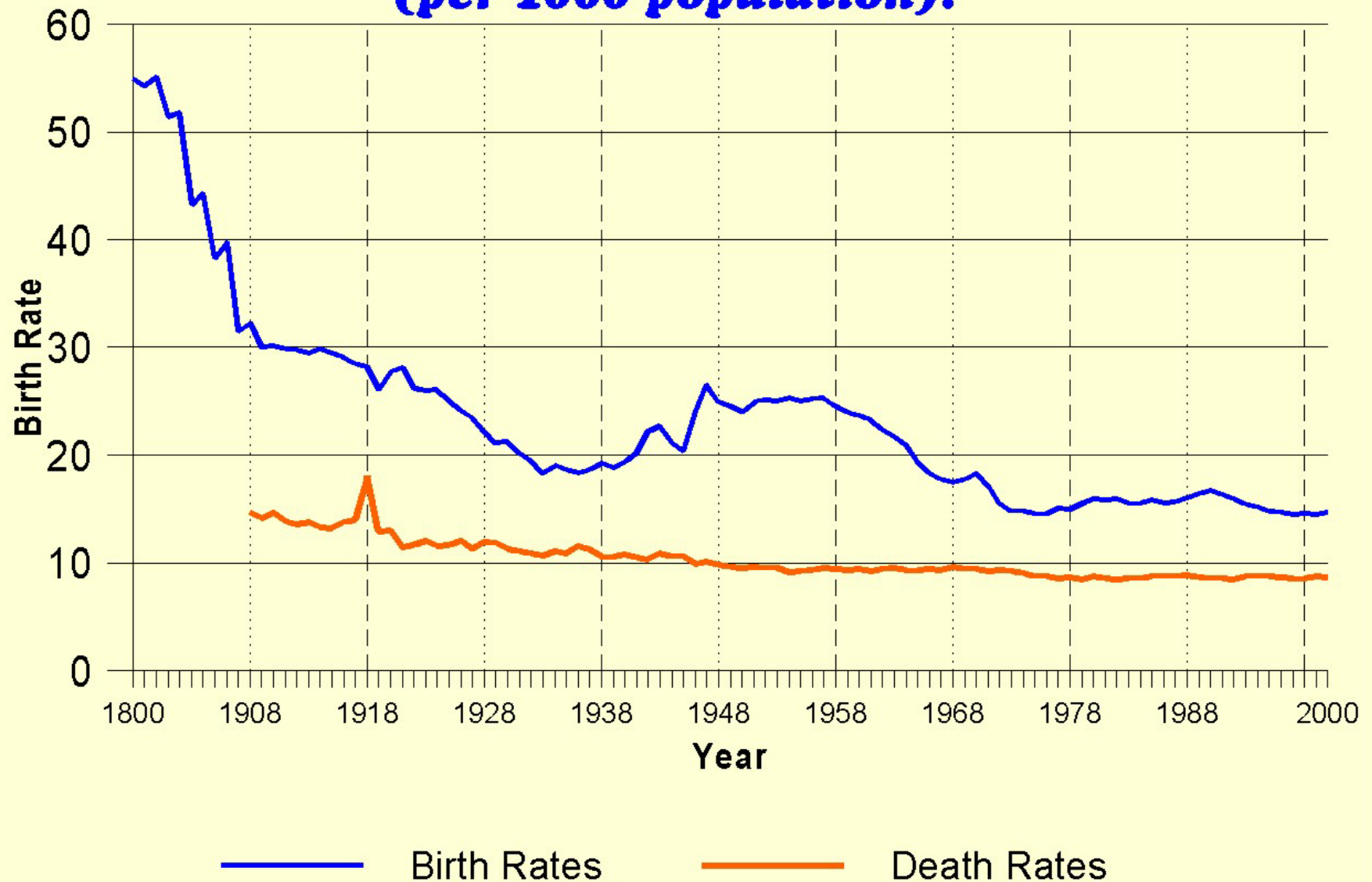


Projected net migration to the US, 1999-2100, under alternative low, middle, and high scenarios.

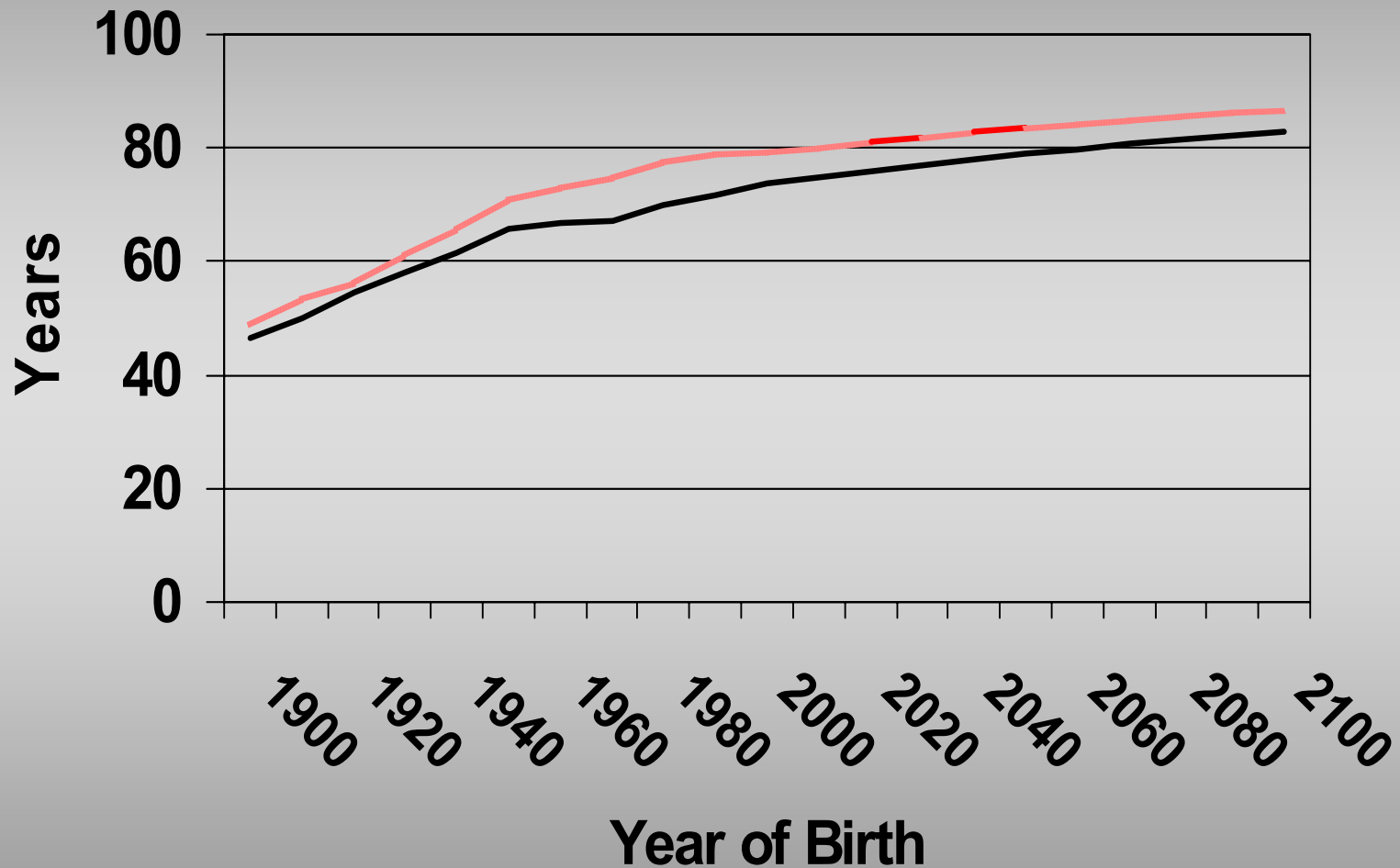
Historic and Projected U. S. Population by Ethnicity



**U.S. Birth Rates: 1800-2000 &
U.S. Death Rates: 1908-2000
(per 1000 population).**



Life Expectancy



Source: Social Security
Administration

— Male — Female

U.S. Population Clock Projection

According to the U.S. Bureau of the Census, the resident population of the United States, projected to 7/22/2004 at 10:30:40 AM EDT is:

293,802,696

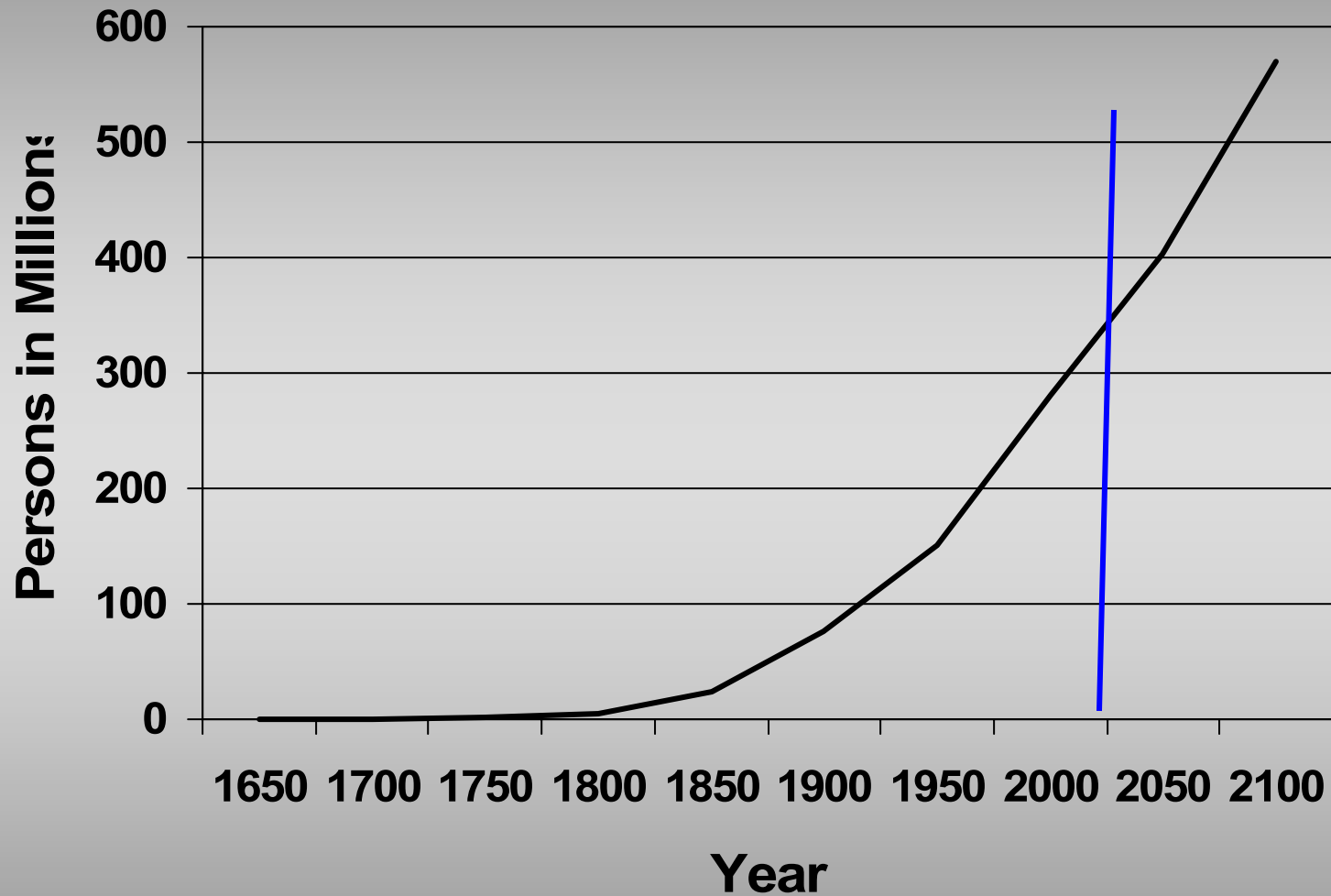
One birth every..... 8 seconds

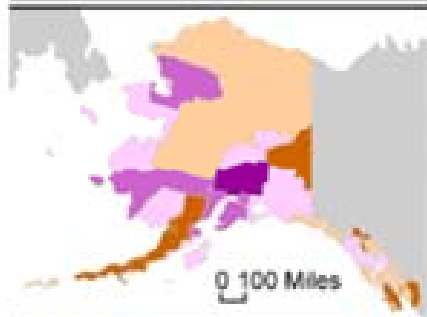
One death every..... 12 seconds

One international migrant (net) every..... 24 seconds

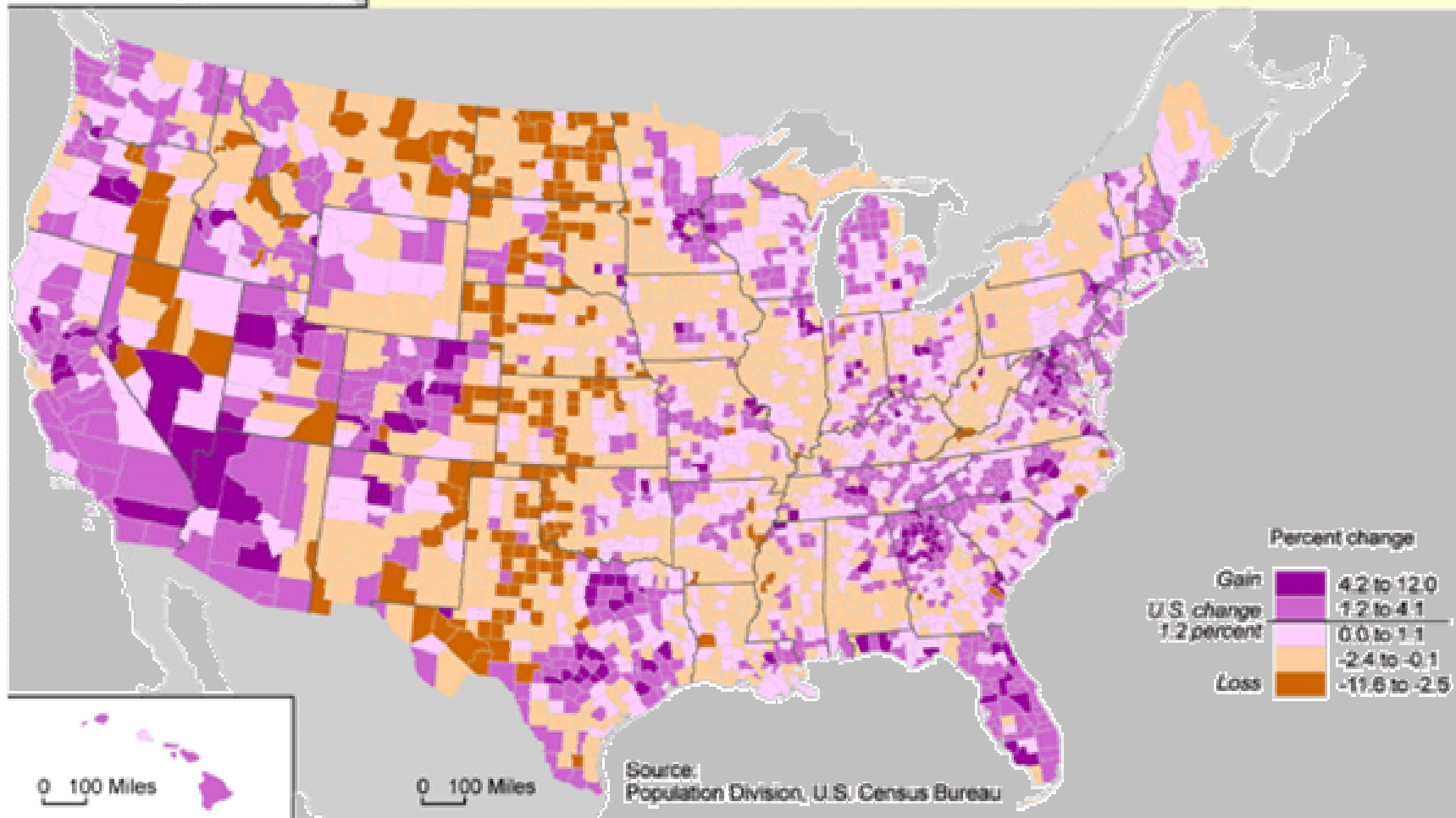
Net gain of one person every..... 11 seconds

Historical and Projected Population in the U.S.





Percent Change in Population by County April 1, 2000 to July 1, 2001



GROWTH = Population
Plus Economic
Expansion

Figure 3. Real GDP Per Capita Over Time

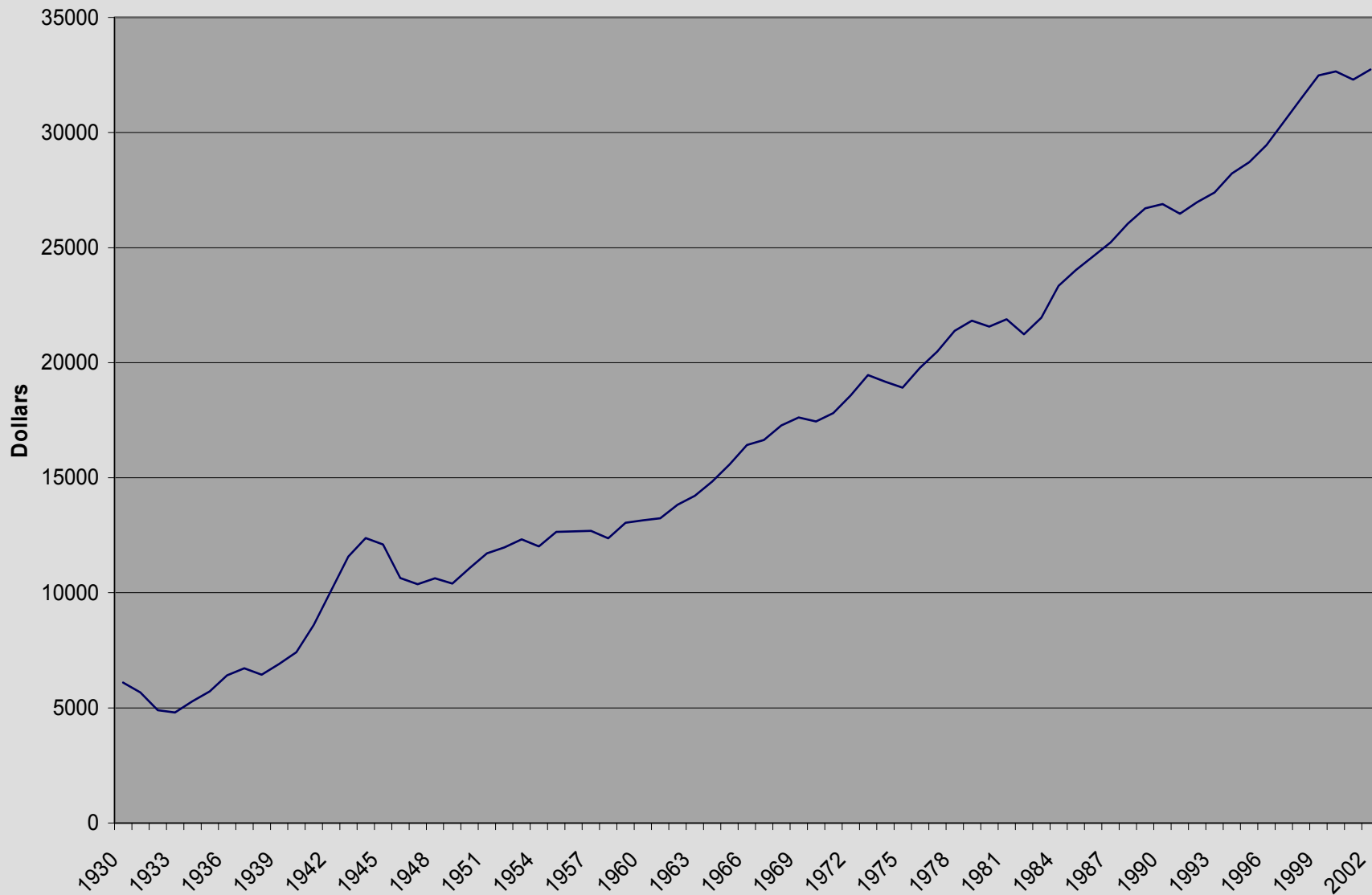
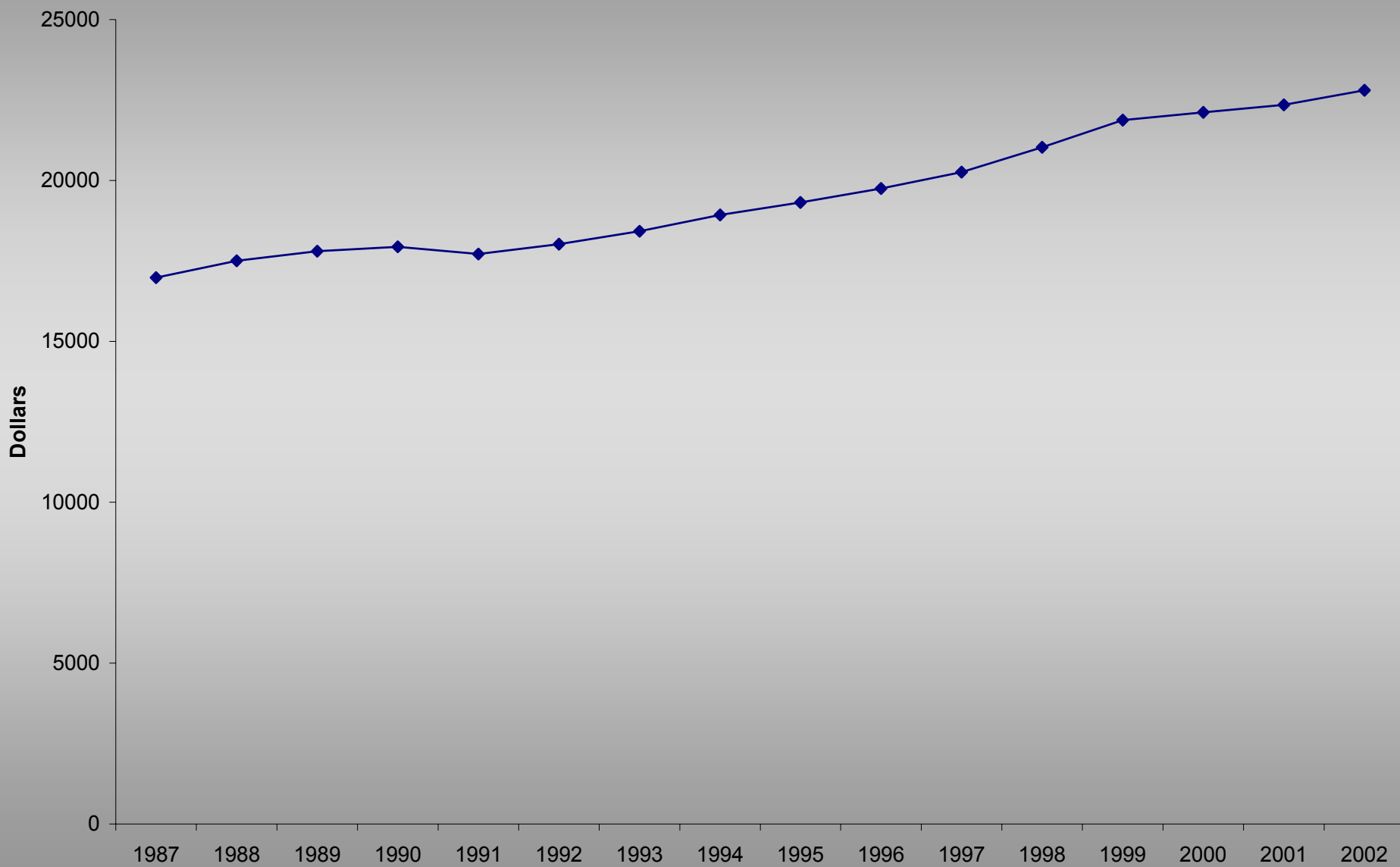
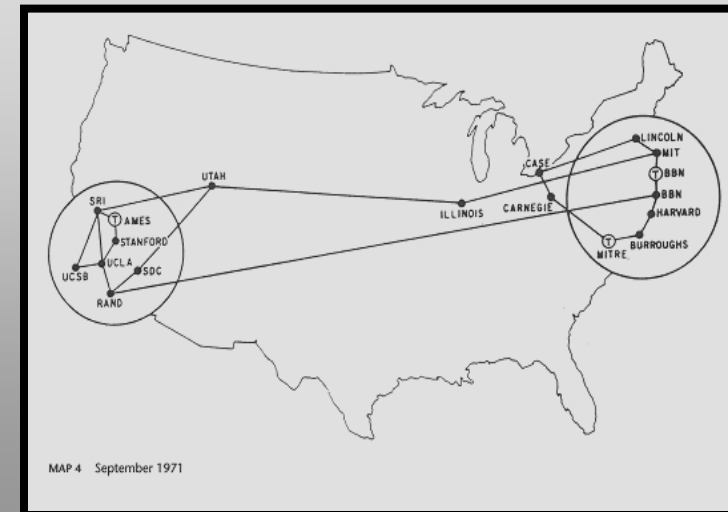


Figure 6. Real Per Capita Personal Consumption Expenditures Over Time

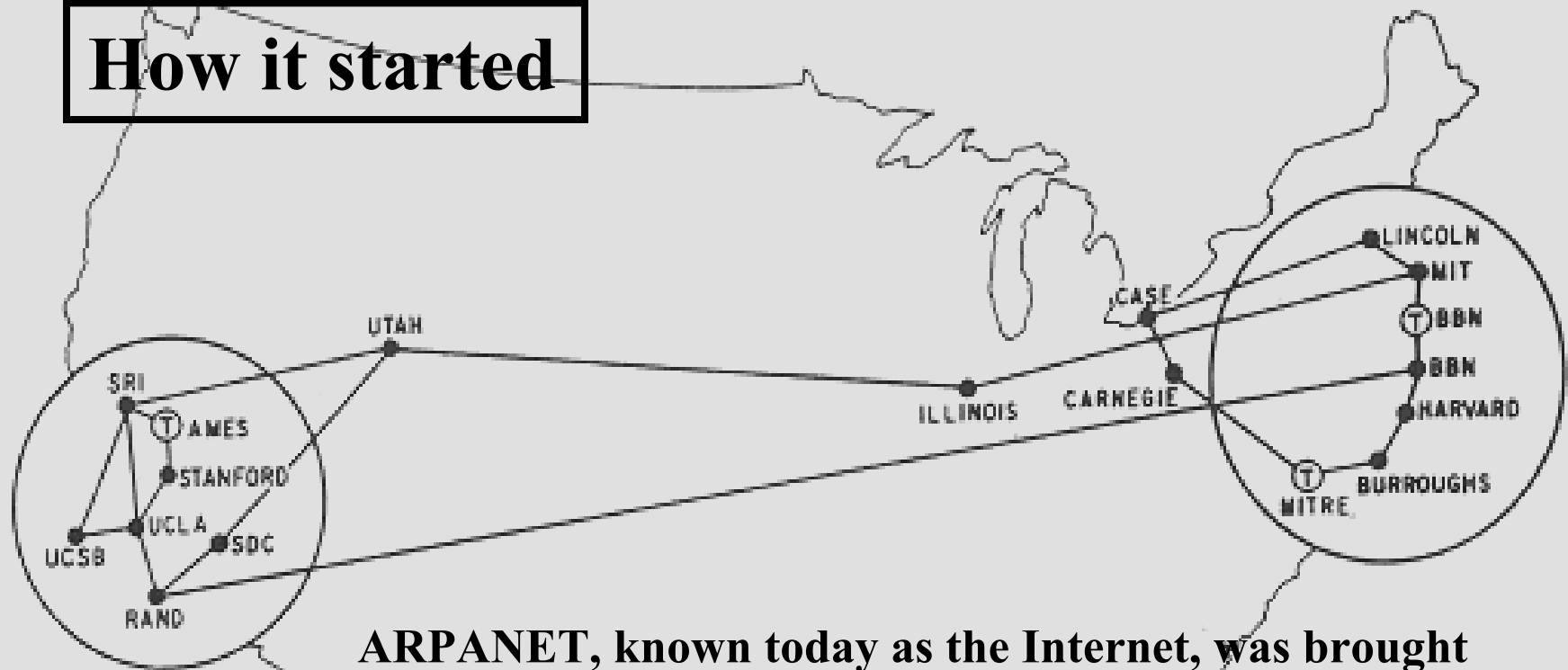


Growth and the Internet

Connection with the World



How it started



ARPANET, known today as the Internet, was brought online in December 1969, when it initially connected four major computers at universities in the southwestern US (UCLA, Stanford Research Institute, UCSB, and the University of Utah). By January 1971, MIT, Harvard, BBN, Systems Development Corp, Stanford, MIT's Lincoln Labs, Carnegie-Mellon, and Case-Western Reserve University were added.

GROWTH OF INTERNET USERS WORLD WIDE

• Dec. 1995	16 Million
• Dec. 1997	70 Million
• Dec. 1999	248 Million
• Dec. 2000	451 Million
• Dec. 2003	719 Million
• April 2004	757 Million

**Type in a Google
Search for Trails =
6,480,000 sites**

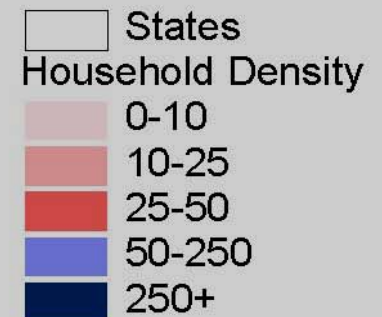
Density of Occupied Housing Units

1970

2000

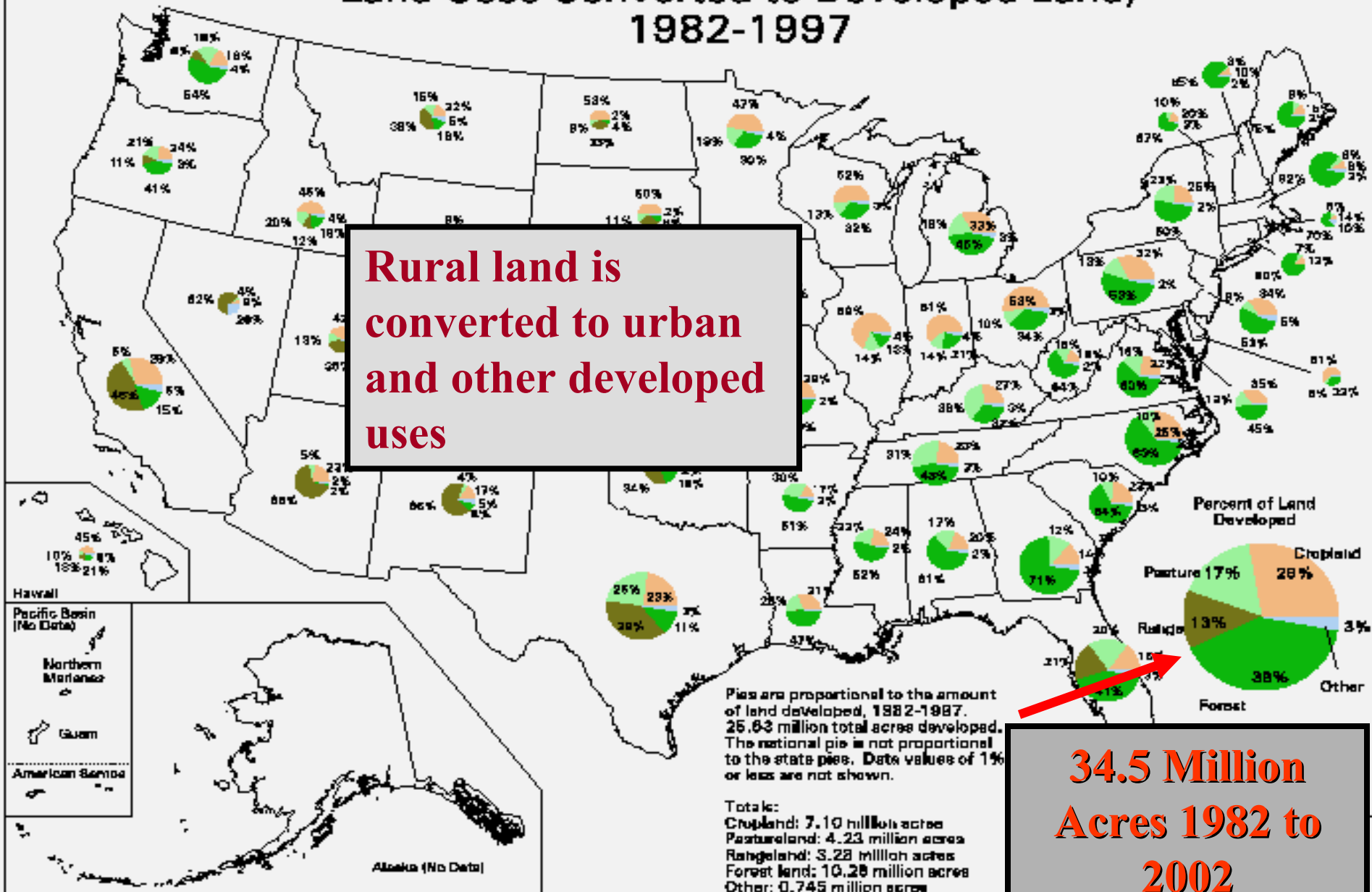
2025

With growth comes change in the landscape



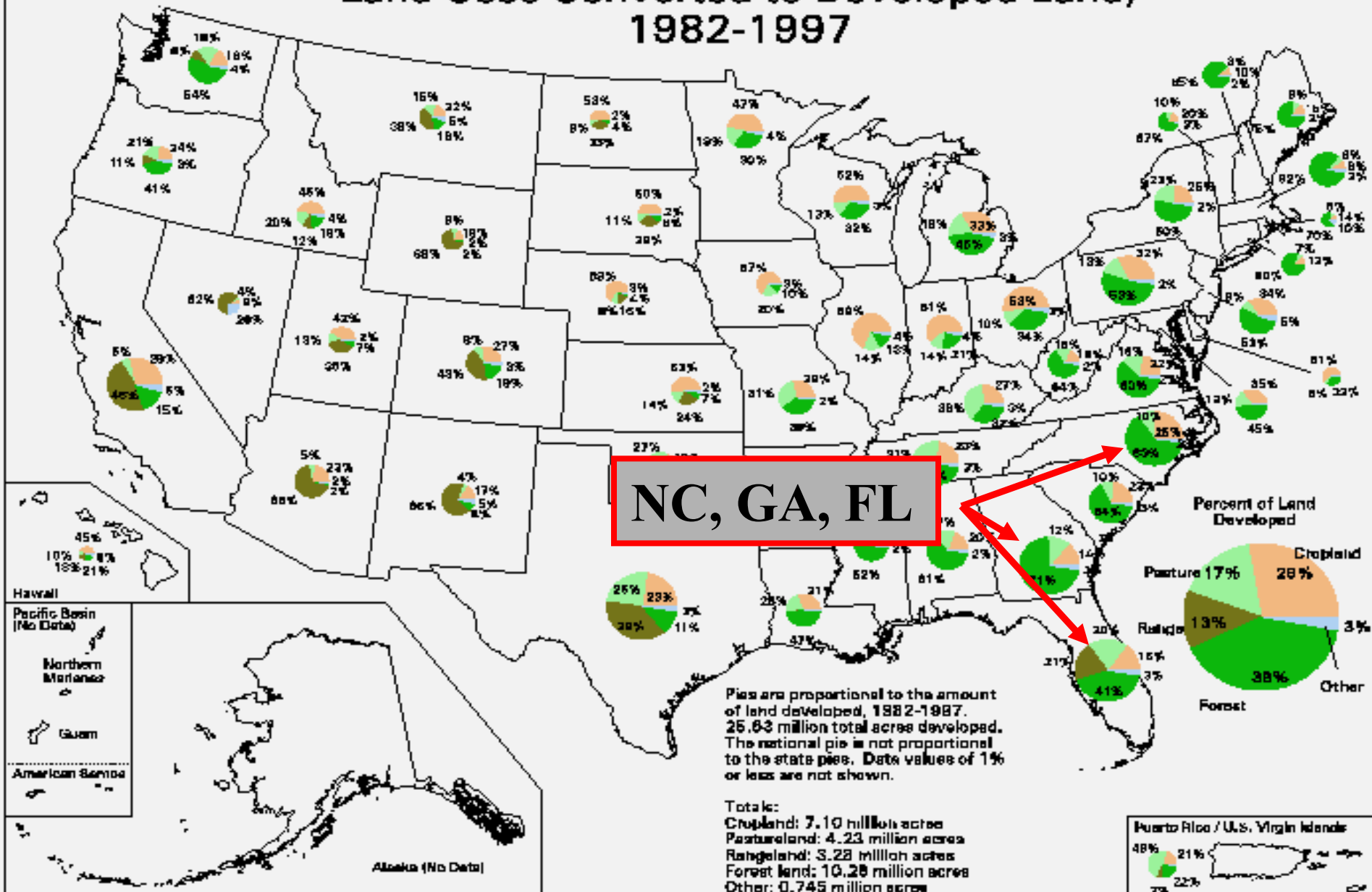
Land Uses Converted to Developed Land, 1982-1997

Rural land is converted to urban and other developed uses

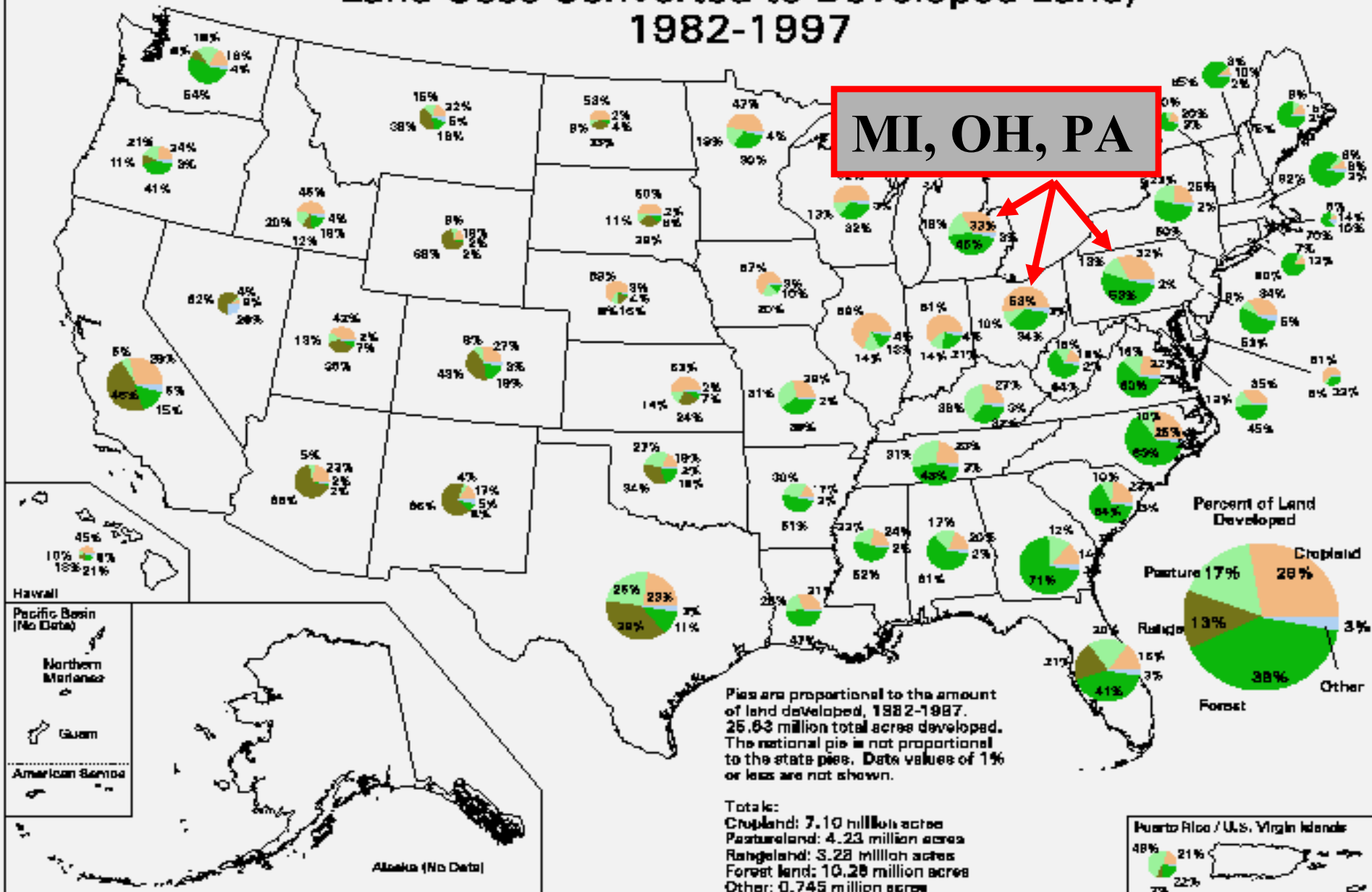


34.5 Million Acres 1982 to 2002

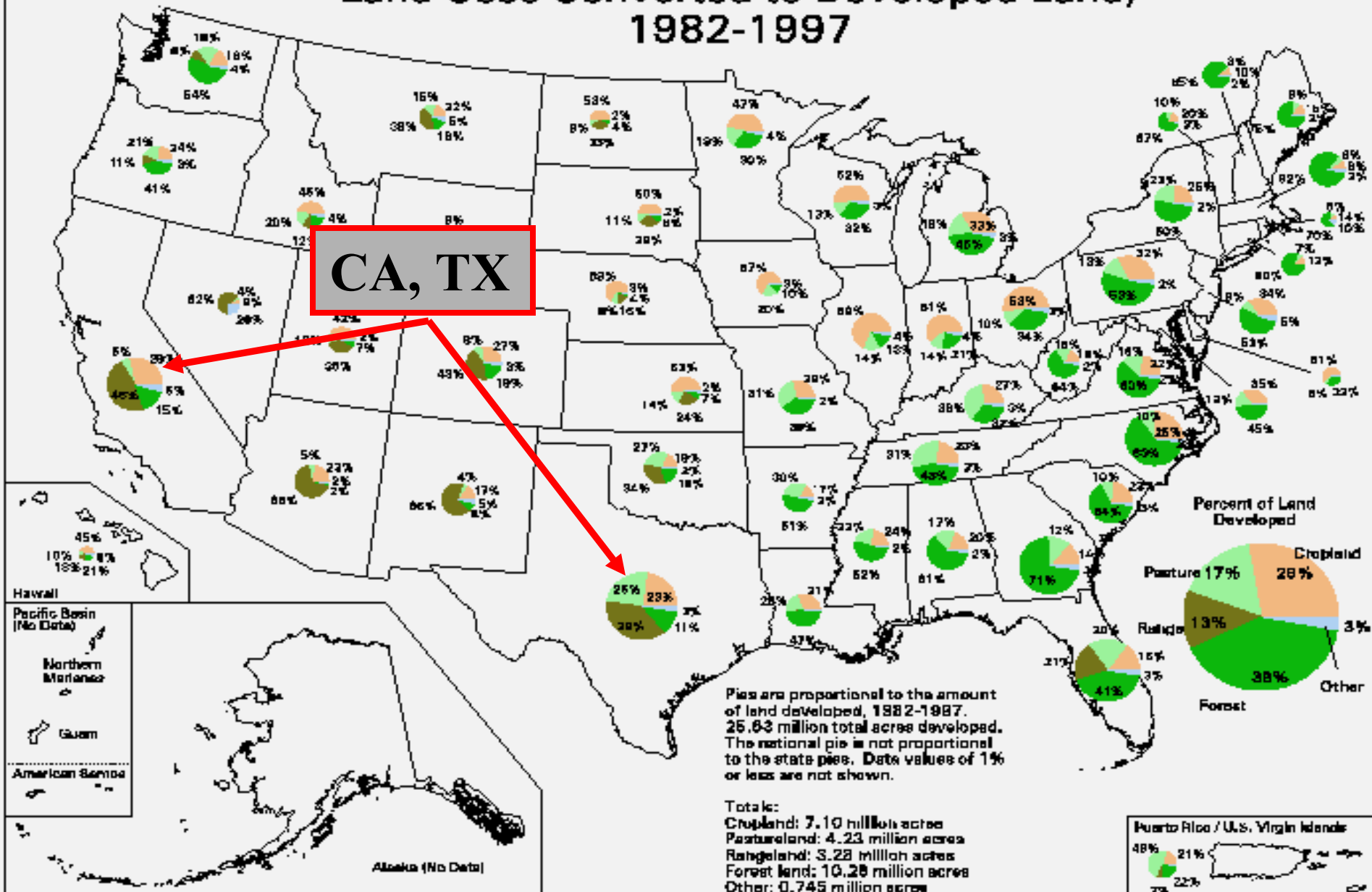
Land Uses Converted to Developed Land, 1982-1997



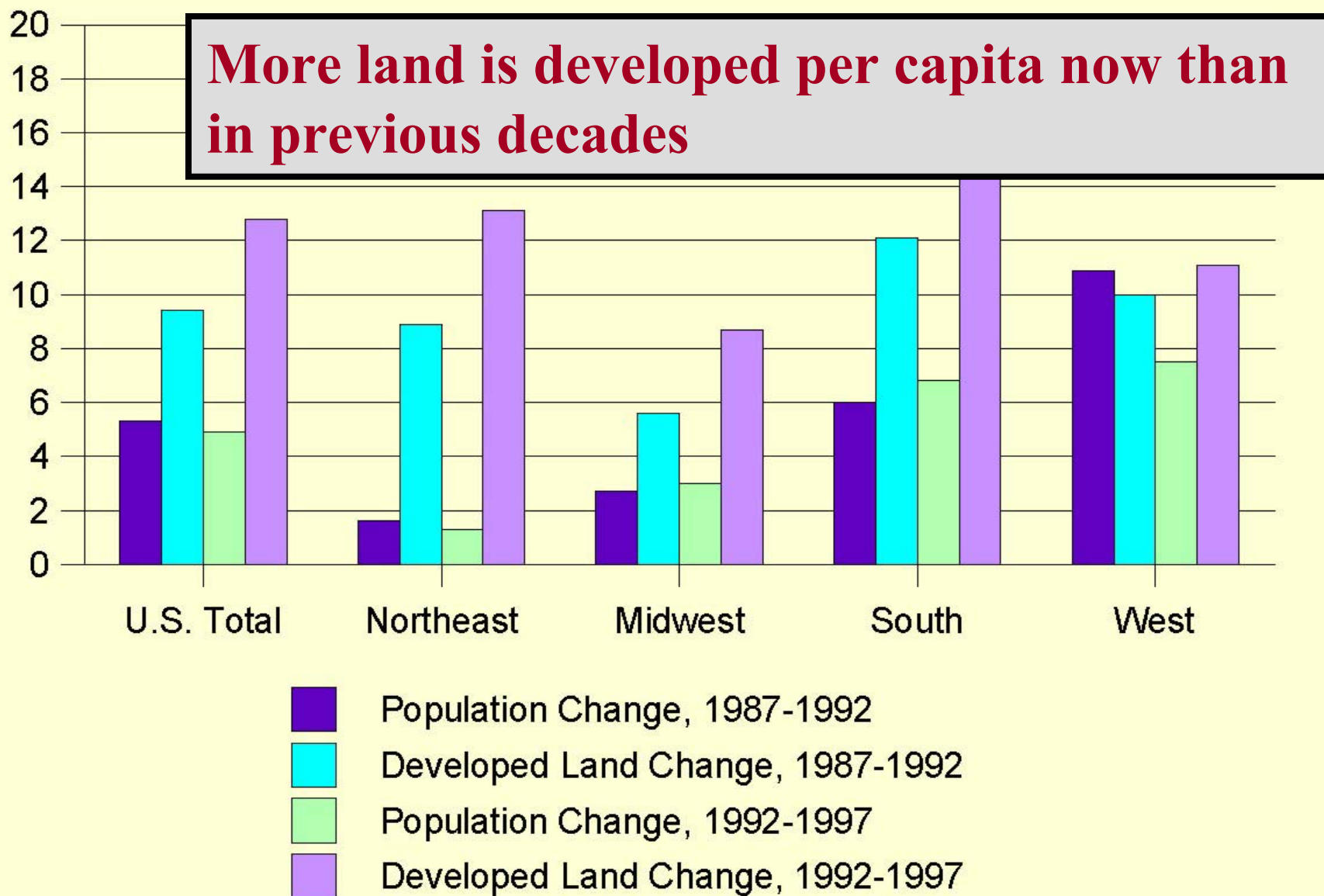
Land Uses Converted to Developed Land, 1982-1997



Land Uses Converted to Developed Land, 1982-1997

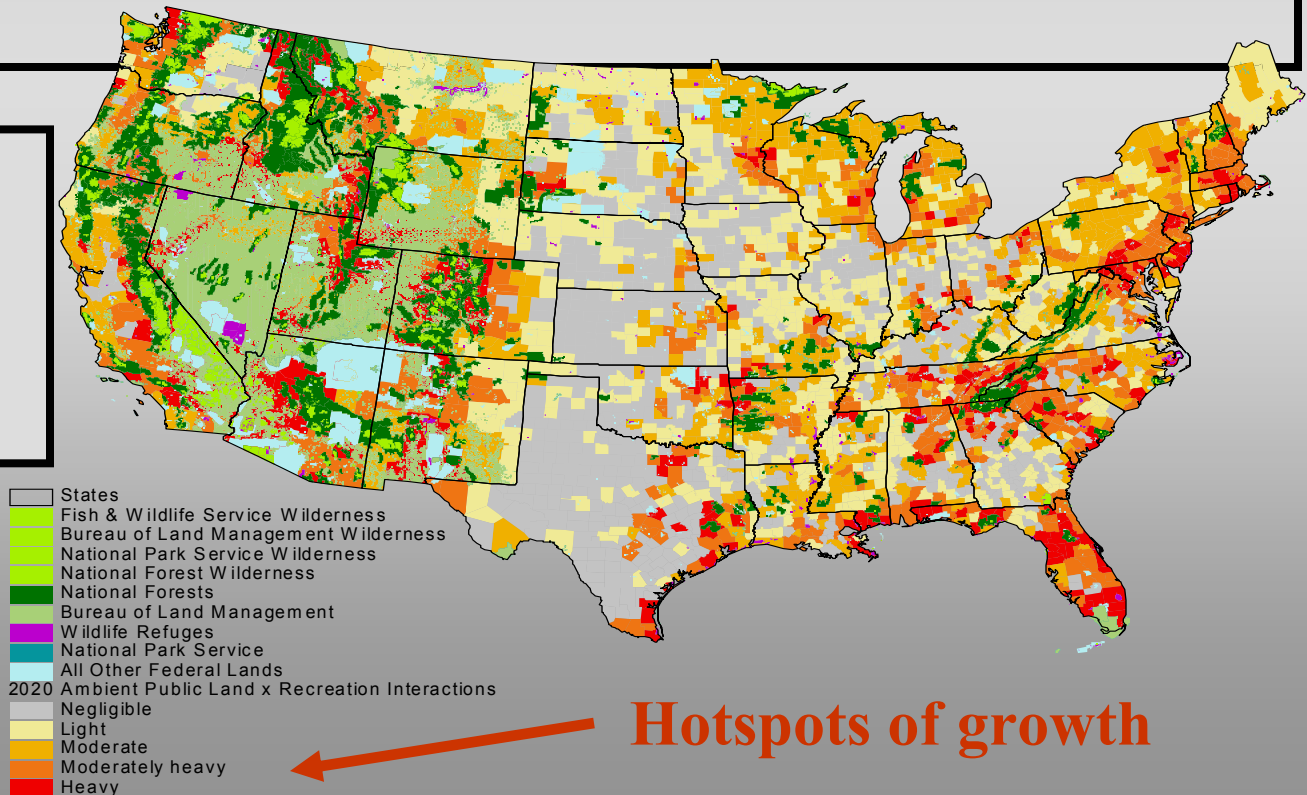


Percentage change in population and developed land in the U.S. total and by region, 1987-1997



Footprints Nearing Public Lands

Much of the growth is happening next to public lands



DEMAND



In large part, resulting from population growth near public lands, recreation demand is growing



Book published in 1999

Outdoor Recreation in American Life

Outdoor Recreation in American Life:

***A National
Assessment of
Demand and
Supply Trends***

H. Ken Cordell
Principal Investigator

The United States' only ongoing, **comprehensive assessment** of the trends, current situation, and likely future of outdoor recreation demand and supply.

Outdoor Recreation for 21st Century America

**A Report to the Nation:
The National Survey on Recreation
and the Environment**



**H. Ken Cordell
Principal Author**

Outdoor Recreation for 21st Century America

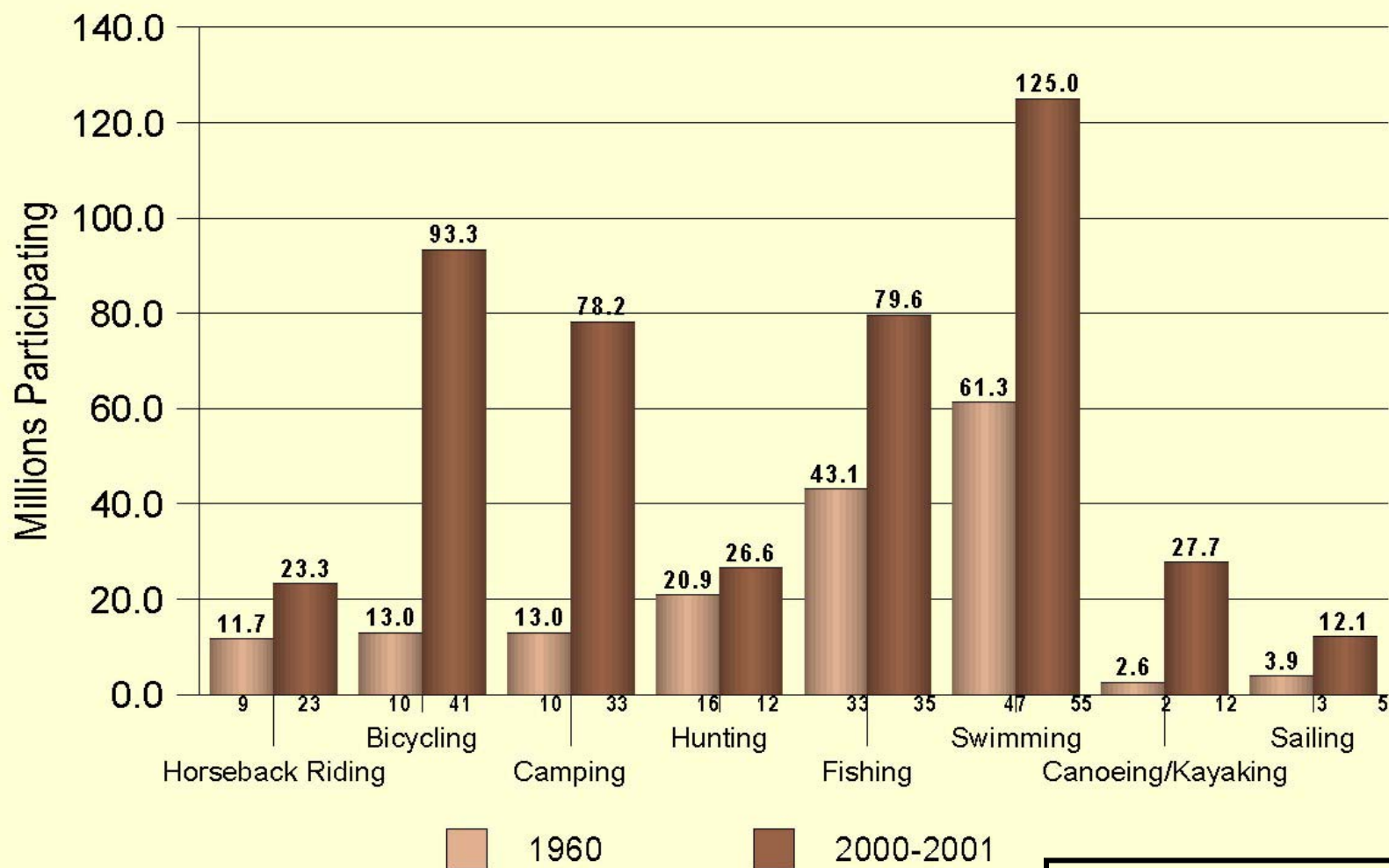
Cordell
Principal Author



VENTURE

Spring 2004

Popularity of selected activities in 1960 and 2000-2001



Numbers at top of columns are percentages

Source NSRE

Relative position of trail activities by **number of occasions**

Type of Activity <div>Source NSRE</div>	Percent who Participate	Occasions (participant per year)
All activities	98.5	273.8
Viewing/learning/gathering activities	88.4	136.1
Developed site activities	94.9	93.3
Trail activities	40.4	40.3
Swimming/surfing/beach activities	62.8	36.6
Motorized activities	62.0	31.3
Hunting and fishing	38.1	26.9
Snow activities	19.3	13.3
Risk activities	35.2	12.0
Other non-motorized activities	22.8	7.9

Recreation Activity Growth in order of **Added Number**

GREATEST GROWTH

Walk for pleasure #1
Family gathering
View wildlife
Visit nature centers
Bicycling
View/photograph fish
Day hiking
Running or jogging
Picnicking
**Attend outdoor
concerts, etc.**
View birds
Developed camping
**Swimming in natural
waters**
**Attend outdoor sports
events**
Visit historic sites

Participating

MODERATE

Sledding
Jet skiing
Visit arch. sites
Drive off-road
Coldwater fishing
Warmwater fishing
Soccer outdoors
Backpacking
**Visit beach or
waterside**
Horseback riding
Canoeing
Primitive camping
Motorboating
Snowboarding
Whitewater Rafting

LEAST GROWTH

Snowmobiling
Kayaking
Ice skating outdoors
Mountain climbing
Big game hunting
Saltwater fishing
Small game hunting
Rock climbing
Downhill skiing
Cross country skiing
Sailing
**Snorkeling or scuba
diving**
Rowing
Migratory bird hunting
Surfing
Pool swimming
Anadromous fishing
Caving

Source NSRE

Percentage change in numbers of participants 16 or older in the United States by activity, 1994 to 2001

Activity	% Change 1994-1995 to 2000-2001	Activity	% Change 1994-1995 to 2000-2001
Kayaking	185.7	Attending outdoor concerts	26.7
Snowboarding	134.8	Basketball outdoors	25.3
Jetskiing	119.3	Primitive camping	24.8
Viewing/photographing fish	96.8	Golfing	23.7
Soccer outdoors	87.2	Small game hunting	21.4
Snowmobiling	70.2	Picnicking	20.9
Ice fishing	59.5	Warmwater fishing	20.9
Sledding	56.2	Migratory bird hunting	20.1
Viewing/photographing wildlife	55.8	Saltwater fishing	19.0
Backpacking	53.8	Tennis outdoors	18.8
Day hiking	51.8	Yard games (e.g., croquet)	16.7
Canoeing	50.7	Sailing	16.6
Bicycling	50.0	Swimming in lakes, streams	16.6
Horseback riding	48.0	Visiting nature centers	16.3
Mountain climbing	46.5	Attending outdoor sports events	14.2
Running or jogging	45.5	Visiting historic sites	13.9
Coldwater fishing	42.8	Rowing	13.6
Ice skating outdoors	42.7	Motorboating	13.2
Surfing	40.4	Downhill skiing	12.5
Developed camping	38.7	Baseball	9.8
Handball/racquetball outdoors	36.8	Snorkeling or scuba diving	9.3
Rafting	36.6	Anadromous fishing	6.2
Driving off-road	36.5	Pool swimming	0.9
Walking for pleasure	35.3	Caving	0.9
Visiting archeological sites	30.7	Sightseeing	-0.5
Viewing/photographing birds	30.6	Waterskiing	-0.6
Football	29.9	Orienteering	-9.4
Family gatherings	29.4	Softball	-12.0
Big game hunting	28.9	Windsurfing	-19.5
Cross-country skiing	27.6	Volleyball outdoors	-19.5
Rock climbing	26.9		

Non-motorized activities growing steadily and adding large numbers

Percentage change in numbers of participants 16 or older in the United States by activity, 1994 to 2001

Activity	% Change 1994-1995 to 2000-2001	Activity	% Change 1994-1995 to 2000-2001
Kayaking	185.7	Attending outdoor concerts	26.7
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Backpacking	53.8	Tennis outdoors	18.8
Day hiking	51.8	Yard games (e.g., croquet)	16.7
Canoeing	50.7	Sailing	16.6
Bicycling	50.0	Swimming in lakes, streams	16.6
Horseback riding	48.0	Visiting nature centers	16.3
Mountain climbing	46.5	Attending outdoor sports events	14.2
Running or jogging	42.8	Visiting historic sites	13.9
Coldwater fishing	42.8	Rowing	13.6
Ice skating outdoors	42.7	Motorboating	13.2
Surfing	40.4	Downhill skiing	10.5
Developed camping	38.7	Baseball	9.8
Handball/racquetball outdoors	36.8	Snorkeling or scuba diving	9.3
Rafting	36.6	Anadromous fishing	6.2
Driving off-road	36.5	Pool swimming	0.9
Walking for pleasure	35.3	Caving	0.3
Visiting archeological sites	30.7	Sightseeing	-0.5
Viewing/photographing birds	30.6	Waterskiing	-0.6
Football	29.9	Orienteering	-9.4
Family gatherings	29.4	Softball	-12.0
Big game hunting	28.9	Windsurfing	-19.5
Cross-country skiing	27.6	Volleyball outdoors	-19.5
Rock climbing	26.9		

**Motorized activities
growing at rapid pace**

Source NSRE

Demand



“When Boulder started buying up land surrounding the city in 1967, it was leading the way as one of the first cities in the country to start an open space program.

Cliff Grassmick

“A line of hikers moves up a Chautauqua Park trail toward the Flatirons on Saturday. The city of Boulder's Open Space Board of Trustees is finishing a proposed set of new rules governing use of open space.”

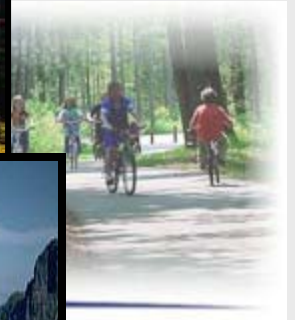
Now, Boulder confronts a growing problem: How to manage land in a way that keeps the natural environment intact while still allowing the people to use land purchased with their sales-tax dollars.”

Local demand is burgeoning

Source:



THE RESOURCE...Is it Growing?



Number of **federal** areas providing recreation facilities in relation to forest area by region, 2002

Areas with Facilities	Region				
	North	South	Rocky Mtns./GPs	Pacific Coast	U.S. Total
Total Number of Areas	428	450	837	457	2,172
Estimated Forest Areas	278	226	189	224	917
Forest Areas w/Camping	105	116	135	135	491
Forest Areas w/Hiking	168	145	123	145	581
Forest Areas w/Picnicking	163	136	139	120	59
Forest Areas w/Snow Sports	98	6	51	43	198

Number of forested state parks providing recreation facilities in relation to forest area by region, 2002

Parks with Facilities	Region				
	North	South	Rocky Mtns./GPs	Pacific Coast	U.S. Total
Total Number of State Parks	1,249	571	363	482	2,665
Forested State Parks	939	331	57	206	1,533
Forest Parks with Camping	490	255	74	149	968
Forest Parks with Hiking	723	274	37	186	1,219
Forest Park Trail Miles	9,762	3,887	392	333	14,375
Forest Park w/Picnicking	763	322	80	183	1,348
Forest Parks w/Snow Sports	382	1	23	8	414

Private land access is shrinking



Facilities and miles of maintained roads and trails on private non-industrial lands in relation to forest area by region, 2002.

Owners and Miles	Region			
	North	South	West ¹	U.S. Total
Millions of forest acres open	90.7	104.8	64.6	260.1
Percent ownerships with overnight facilities	24.1	17.9	30.9	22.5
Percent ownerships with day-use facilities	20.4	17.3	13.6	18.2
Millions of trail miles on private forested land	2.33	3.33	.41	6.07
Millions of road miles on forested land	2.95	4.26	1.19	8.40

¹ The Rocky Mountain/Great Plains, and Pacific Coast Regions are combined due to limited data sample size. ² Cabins, campsites, or other overnight sites. ³ Picnic, swimming or other day-use facilities.

Estimate of trail miles in the U.S. by region and ownership

Ownership	East	West	Total
Forest Service	21,441	113,876	135,317
National Park Service	3,082	10,031	13,113
Army Corps of Engineers	3,825	1,274	5,099
Fish & Wildlife Service	726	399	1,125
Bureau of Land Management	0	13,640	13,640
Tennessee Valley Authority	39	0	39
Bureau of Reclamation	0	498	498
State Parks	17,908	17,317	35,225
Private Forest Lands (estimate)	5,663,748	411,041	6,074,789
TOTAL	5,710,769	568,076	6,278,845

National estimates of forest area available for recreation and acres per person , 2002

Region	Million acres available	Population (1000s)	Acres per Person
North	143.9	120,651	1.19
South	153.1	91,776	1.67
Rocky Mtns./Great Plains	137.0	23,969	5.71
Pacific Coast	209.2	45,026	4.64
Total U.S.	643.1	281,422	2.29

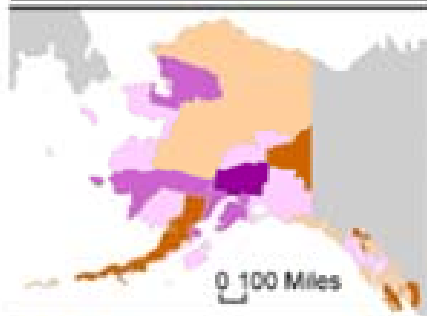
**National estimates of forest area available
for recreation and acres per person in 2002
2025, and 2050**

Per Capita Supply

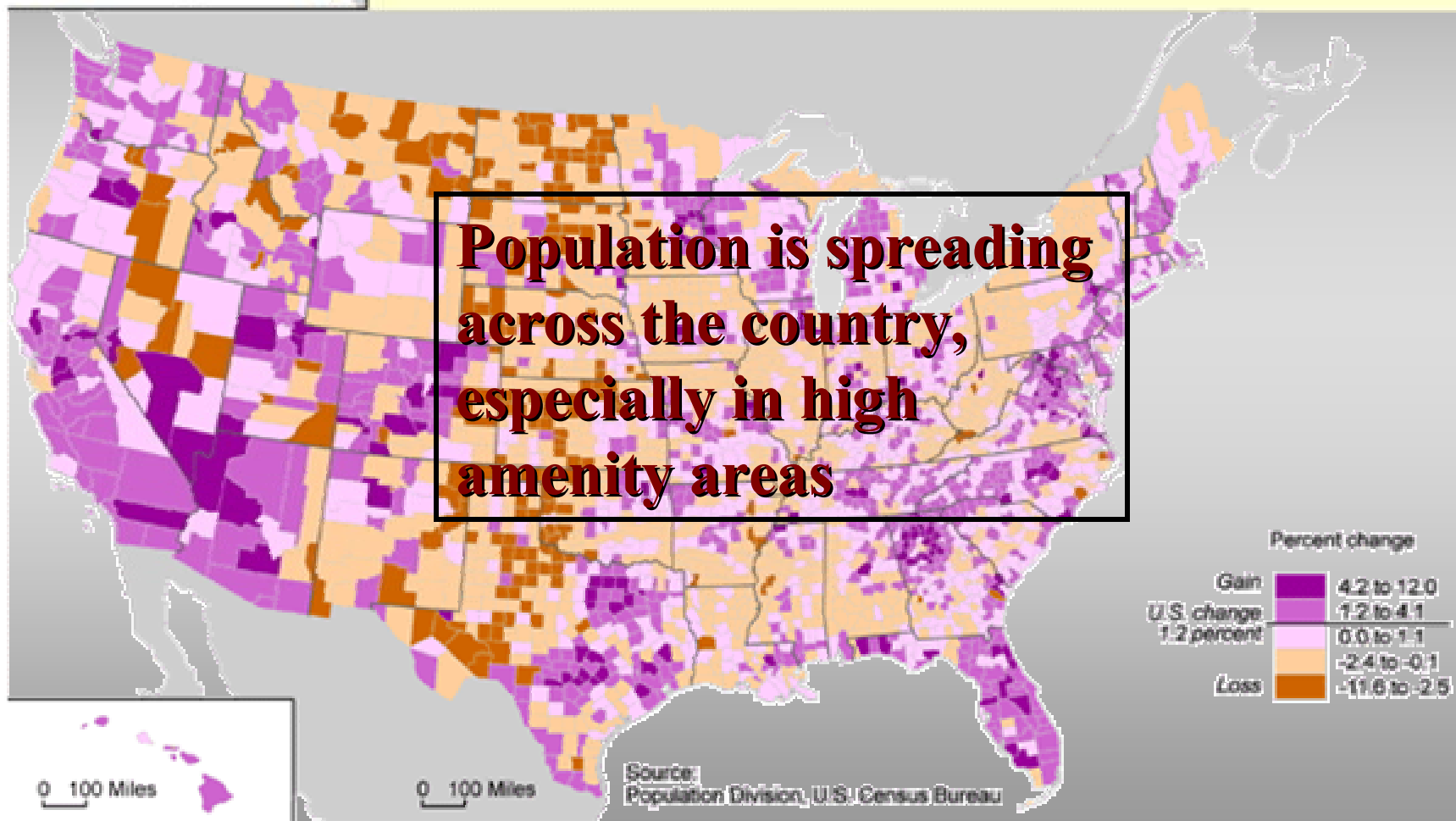
Total U.S. 2002	643mm	281mm	2.29
Total U.S. 2025	640mm	337mm	1.90
Total U.S. 2050	635mm	403mm	1.58

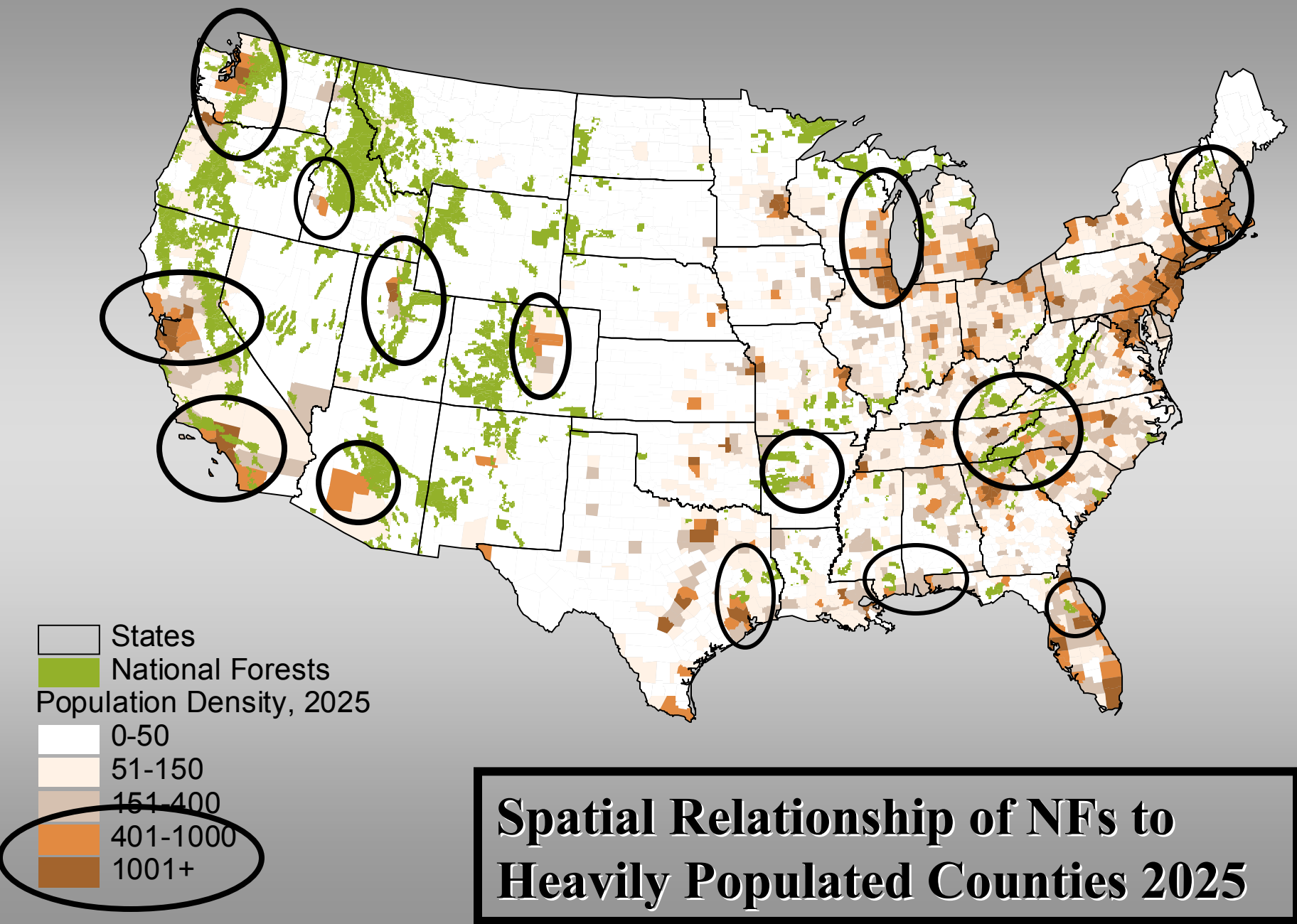


Projected Population 2100 = 571,000,000

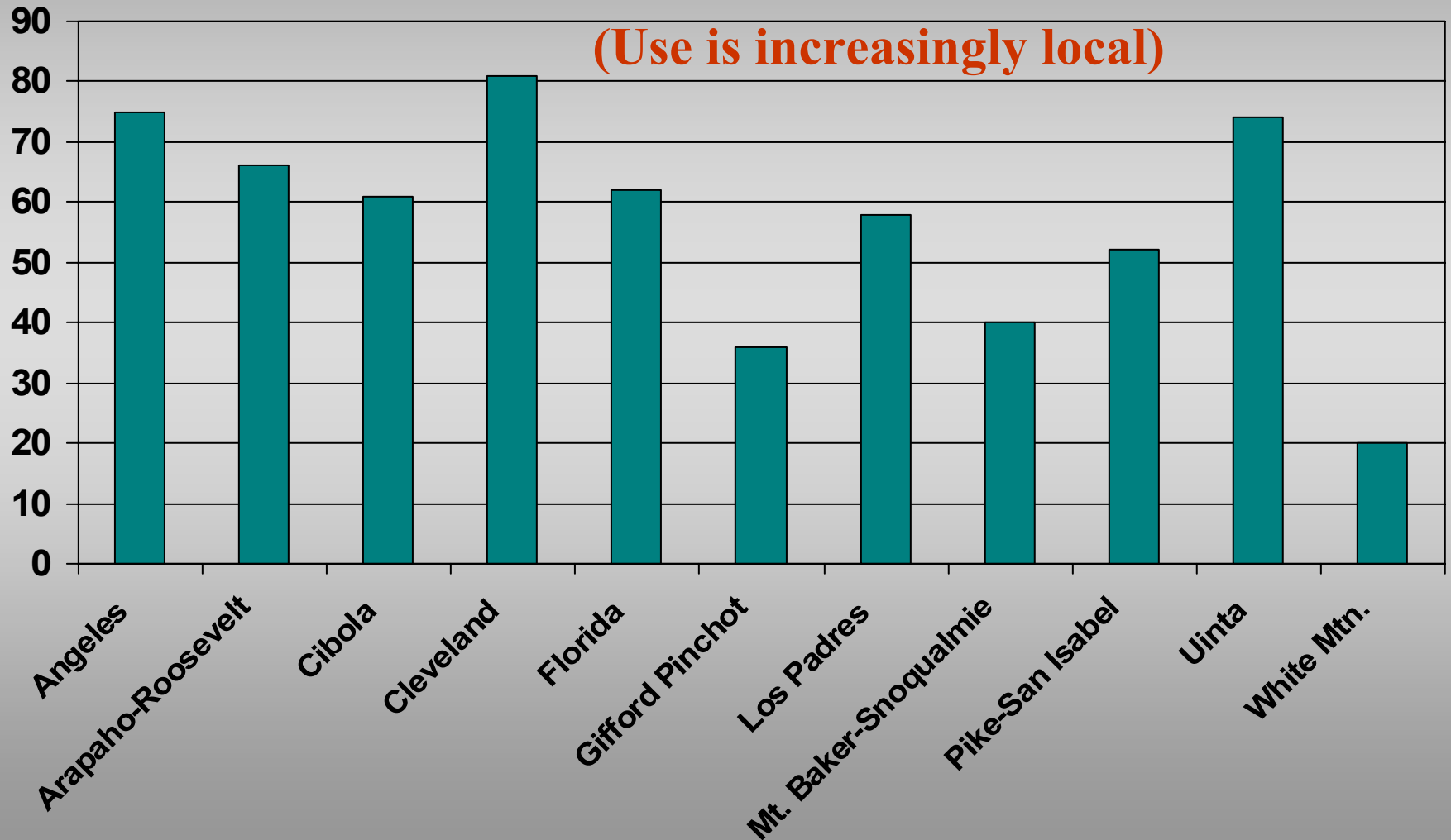


Percent Change in Population by County
April 1, 2000 to July 1, 2001

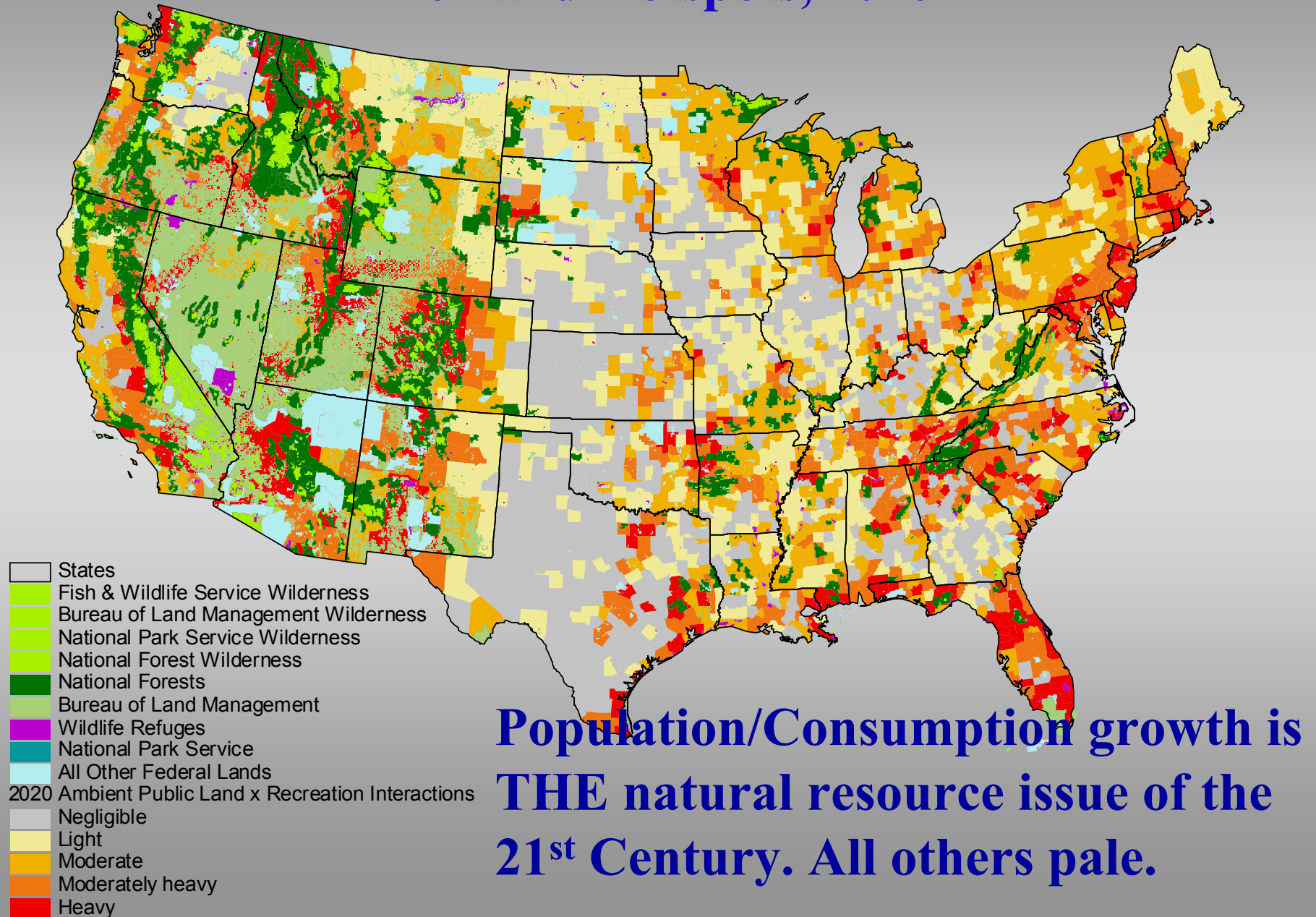




Percent of NF Visits by Persons Living Within 50 Miles of the Forest



Public Lands and NWPS Lands Overlaid onto Projected Demand Hotspots, 2020

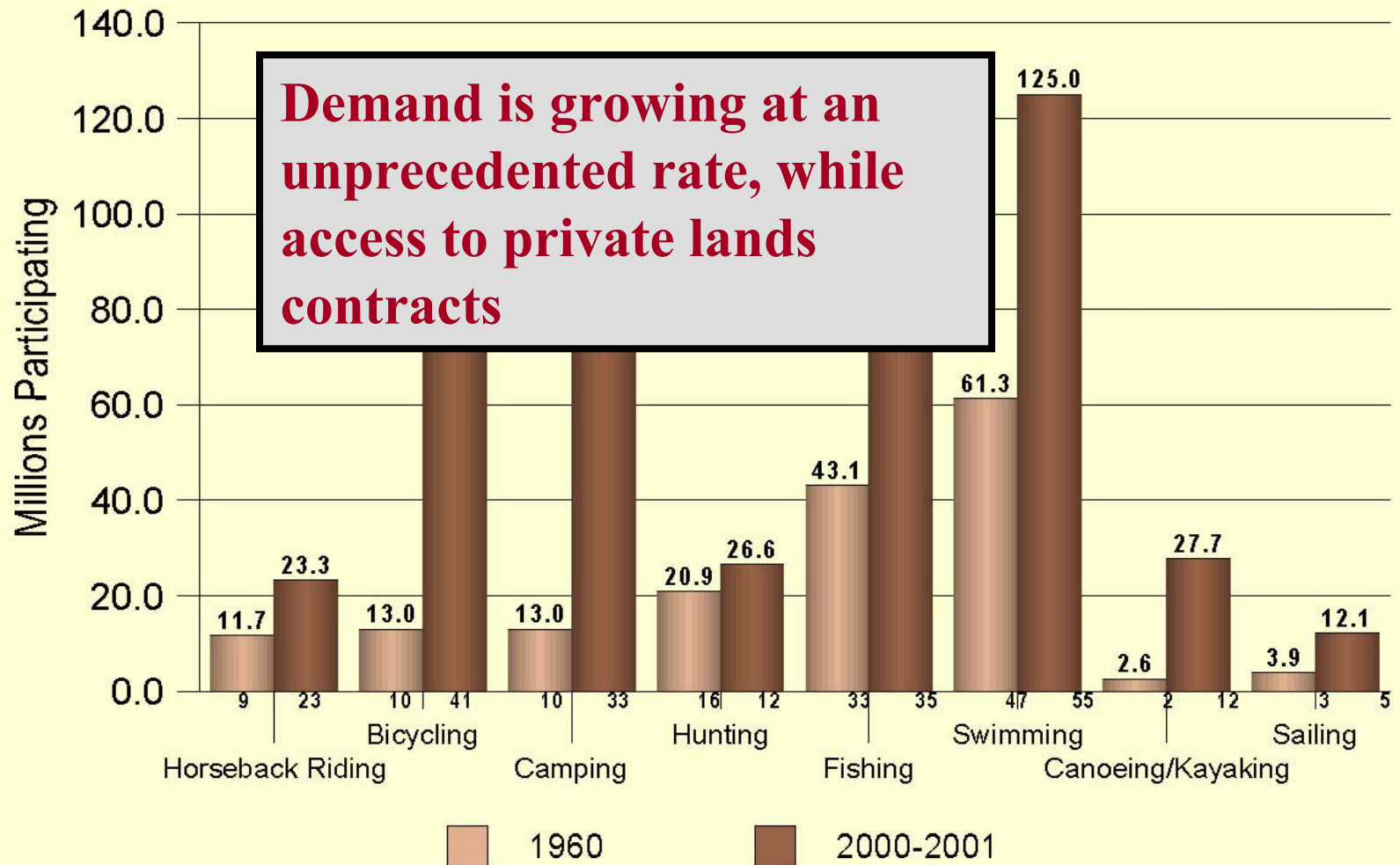


**As population grows
and spreads spatially,
public lands will become
ever more important**

1 5 25 50 100 250 500 1000

Persons per square kilometer

Popularity of selected activities in 1960 and 2000-2001



Numbers at top of columns are percentages

Demand



When Boulder started buying up land surrounding the city in 1967, it was leading the way as one of the first cities in the country to start an open space program.

Cliff Grassmick

“A line of hikers moves up a Chautauqua Park trail toward the Flatirons on Saturday. The city of

Boulder's Trustees i
new rules

As more people move next to public lands and use the trails on them, pressures mount and management becomes ever more challenging

Now, Boulder confronts a growing problem: How to manage land in a way that keeps the natural environment intact while still allowing the people to use land purchased with their sales-tax dollars.

Percentage change in numbers of participants 16 or older in the United States by activity, 1994 to 2001

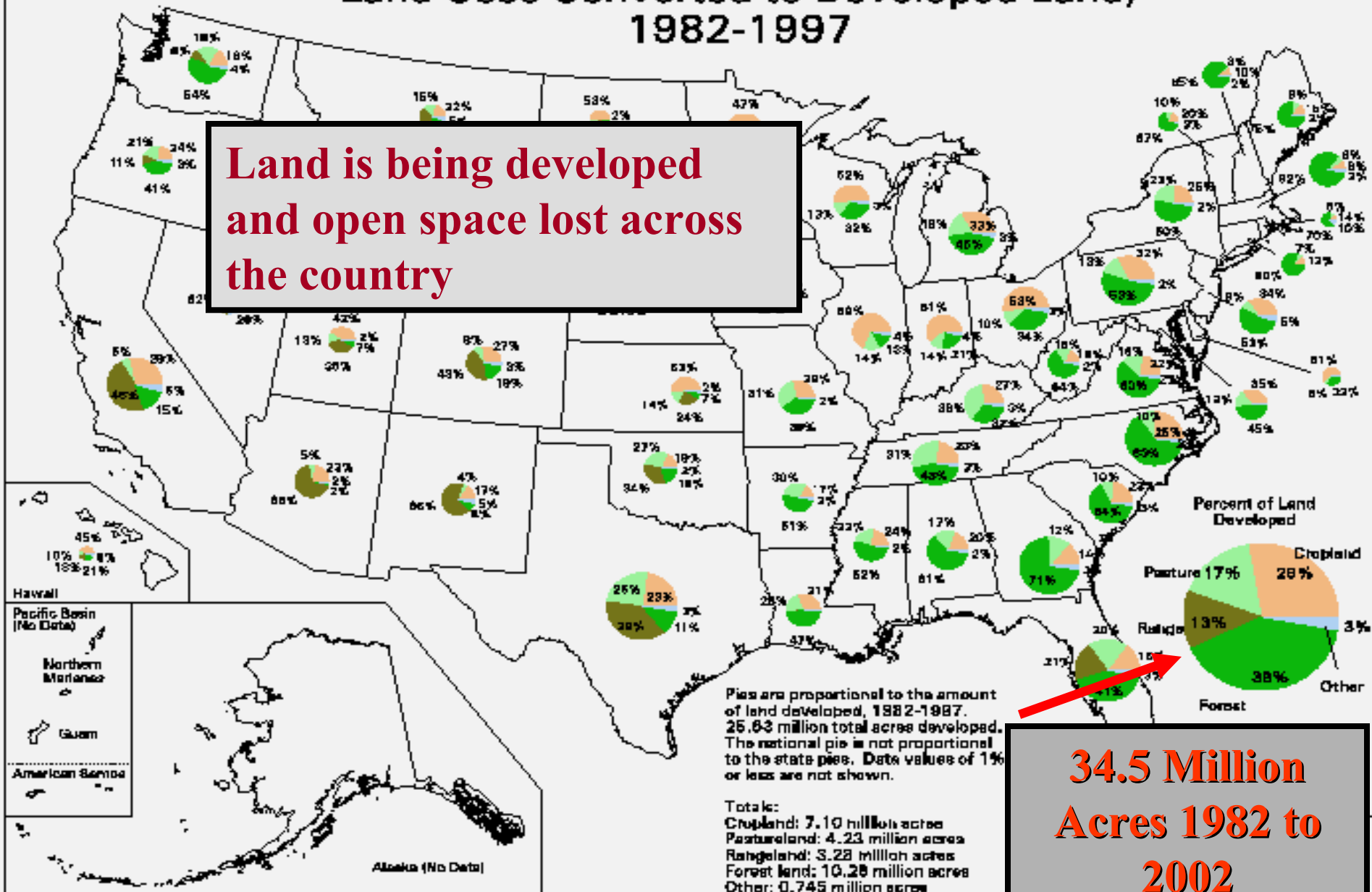
Activity	% Change 1994-1995 to 2000-2001	Activity	% Change 1994-1995 to 2000-2001
Kayaking	48.7	Attending outdoor concerts	26.7
Snowboarding	45.2	Swimming in pools	25.3
Jetskiing	44.8	Swimming in lakes, streams	24.8
Viewing/photographing wildlife	43.7	Swimming in oceans	23.7
Soccer outdoors	41.4	Swimming in hot tubs	21.4
Snowmobiling	40.9	Warmwater fishing	20.9
Ice fishing	59.5	Migratory bird hunting	20.1
Sledding	56.2	Saltwater fishing	19.0
Viewing/photographing wildlife	55.8	Tennis outdoors	18.8
Backpacking	53.8	Yard games (e.g., croquet)	16.7
Day hiking	51.8	Sailing	16.6
Canoeing	50.7	Swimming in lakes, streams	16.6
Bicycling	50.0	Visiting nature centers	16.3
Horseback riding	48.0	Attending outdoor sports events	14.2
Mountain climbing	46.5	Visiting historic sites	13.9
Running or jogging	45.5	Rowing	13.6
Coldwater fishing	42.8	Motorboating	13.2
Ice skating outdoors	42.7	Downhill skiing	12.5
Surfing	40.4	Baseball	9.8
Developed camping	38.7	Snorkeling or scuba diving	9.3
Handball/racquetball outdoors	36.8	Anadromous fishing	6.2
Rafting	36.6	Pool swimming	0.9
Driving off-road	36.5	Caving	0.9
Walking for pleasure	35.3	Sightseeing	-0.5
Visiting archeological sites	30.7	Waterskiing	-0.6
Viewing/photographing birds	30.6	Orienteering	-9.4
Football	29.9	Softball	-12.0
Family gatherings	29.4	Windsurfing	-19.5
Big game hunting	28.9	Volleyball outdoors	-19.5
Cross-country skiing	27.6		
Rock climbing	26.9		

Demand for trail activities is growing steadily, motorized and non-motorized

Non-motorized activities growing steadily and adding large numbers

Land Uses Converted to Developed Land, 1982-1997

Land is being developed and open space lost across the country



34.5 Million Acres 1982 to 2002

The Problem with Future Supply

- Accommodating future growth in recreation demands **will likely fall heavily on public properties** and providers
- For federal properties, management of ecosystems and recreation are higher priorities, but **funding is not coming** with those priorities
- State lands, especially state parks, are **reaching maturity**, except for high-end development
- Private landowners are continuing to **close more land**

	<u>Landowner Intentions</u>	
	<u>National</u>	<u>South</u>
• open more	5%	4%
• same	88%	91%
• less	7%	5%

Knowing the Public's Sentiments for Managing Public Lands is Critical (%)

Very important

Expanding access for motorized vehicles (20%)

Developing trail systems for motorized uses (29%)

Developing trail systems for non-motorized rec. (57%)

Conserving/protecting sources of water (91%)

Designating more wilderness areas (58%)

Developing paved roads for cars (19%)

Preserving resources through policies (75%)

Preserving wilderness experience (74%)

Protecting ecosystems/habitats (86%)

Increasing acres in public land (53%)

Expanding commercial recreation (28%)

Informing public on potential environmental impacts (81%)

NSRE 2005

*NATIONAL SURVEY ON
RECREATION AND THE
ENVIRONMENT*

SINCE 1960

**THE UNITED STATES' ON-GOING
NATIONAL RECREATION SURVEY**

DETAILED HOUSEHOLD AND INDIVIDUAL DATA



(Employs Bureau of Census Protocols)

Number of household members by age and sex

Citizenship, where born and country of origin

Race and ethnicity

Occupation and employment status

City, rural/urban, ZIP Code

Childhood origin

Income and education

Disabilities

NSRE

NSRE

- **A sample of 50,000+ households, from the Keys to the Arctic Wildlife Refuge**
- **Includes non-institutionalized individuals 16 +**
- **Is the Nation's on-going recreation survey, will be the 8th**
- **Interagency sponsorship—USFS, NOAA, ERS, EPA, NPS, BLM, FWS, states,**
- **Others involved, NFs, Wilderness, Numerous State Agencies, OIA maybe, America's Wilderness, NRCS, Montreal Process,**

Book coming in late 2004



Venture Publishing, Inc.
BOOKS THAT MATTER

*Recreation and Leisure Studies • Long-Term Care • Therapeutic Recreation
Activity Programming • Public, Private, and Commercial Recreation*

The Multiple Values of Wilderness

Cordell
Principal Author



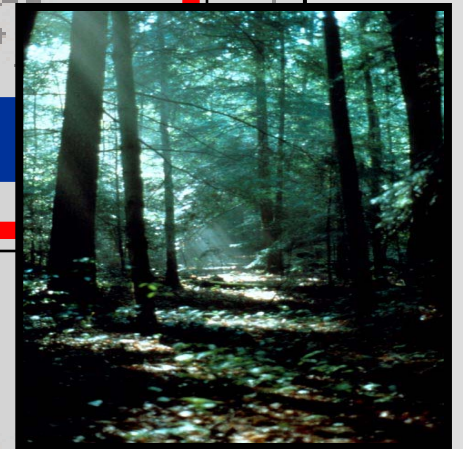
VENTURE

The Multiple Values of Wilderness



H. Ken Cordell
Principal Author

PUBLIC LANDS AND TRAILS IN A VERY FAST CHANGING SOCIAL LANDSCAPE

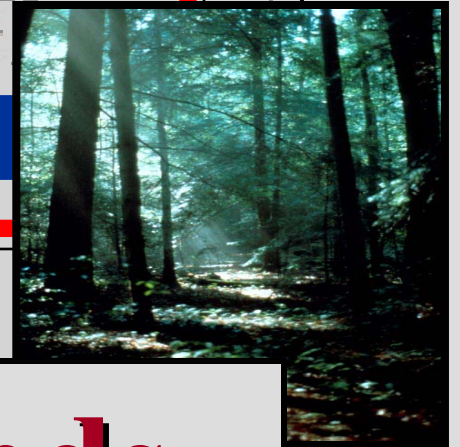


1 5 25 50 100 250 500 1000

Persons per square kilometer

www.srs.fs.fed.us/trends

PUBLIC LANDS AND TRAILS IN A VERY FAST CHANGING SOCIAL LANDSCAPE



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1 5 25 50 100 250 500 1000

Persons per square kilometer

